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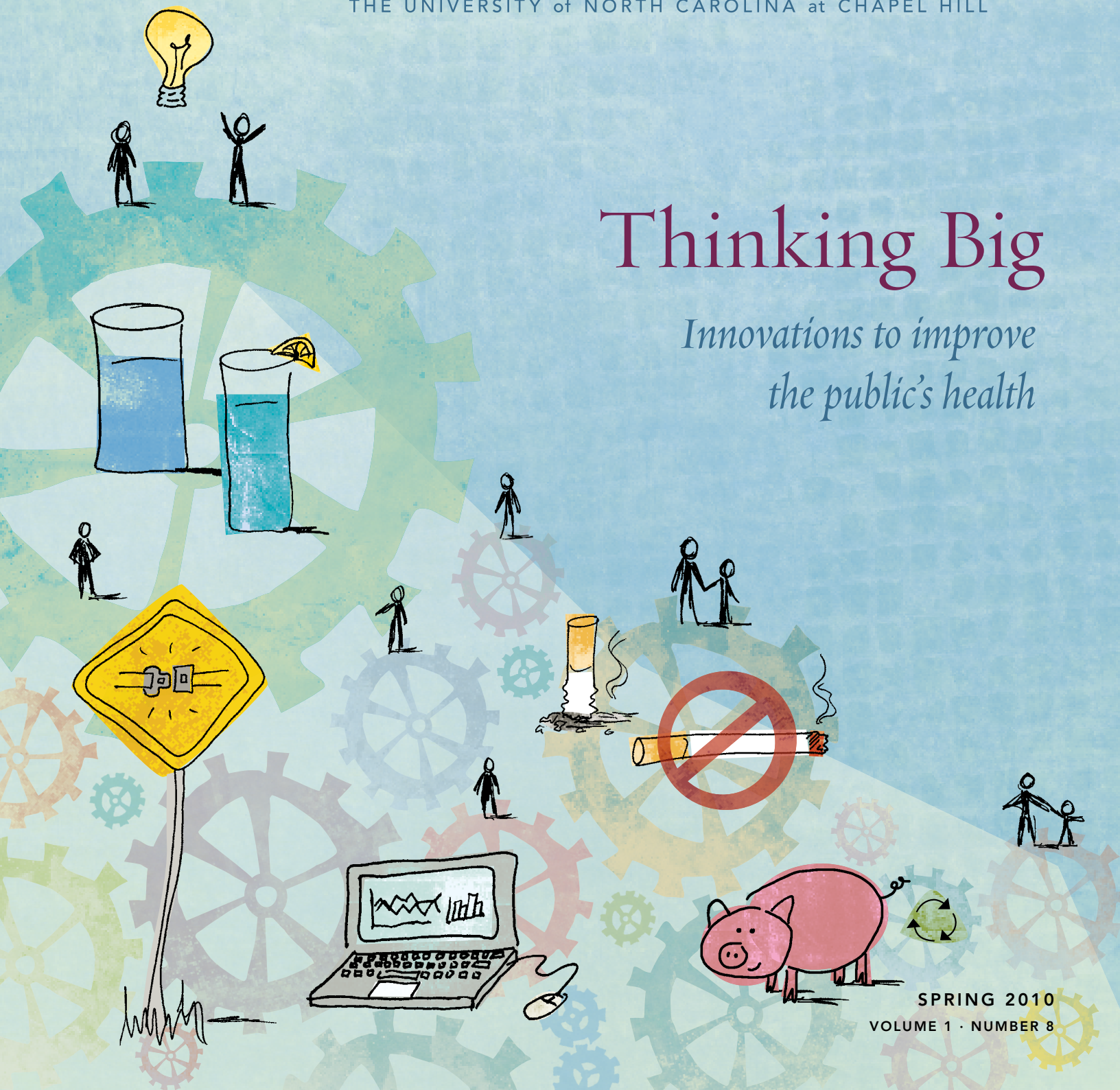

Thinking Big

Innovations to improve the public's health

SPRING 2010
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contents

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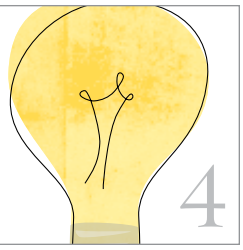

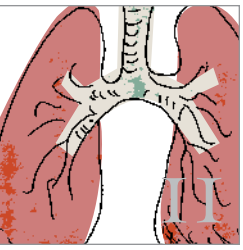

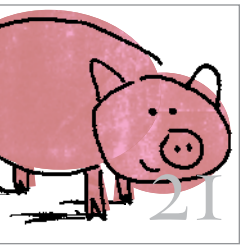

features & news

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spring 2010

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UNC GILLINGS SCHOOL OF GLOBAL PUBLIC HEALTH

Innovation Matters!

LISA MARIE ALBERT

Dr. Barbara K. Rimer

UNC Chancellor Holden Thorp wants Carolina to be an innovation hub. As leader of a great public university and a scientist known for chemistry inventions, Thorp understands that innovations play a critical role in improving health and society. In this issue of *Carolina Public Health*, we investigate innovation's role in our School and its broader implications for public health.

Innovation refers both to some new thing—a product, program or idea thought to be an improvement over what preceded it—and a process of getting the *thing* into practice. In public health, especially in our School, we aim to solve some of the world's greatest problems—providing safe water to people who lack it, helping to change unhealthy behaviors, such as smoking and poor diets, reducing errors in operating rooms and pharmacies, and developing better ways to conduct clinical trials. Too many interventions are cumbersome, costly or culturally inappropriate. We need practical, practicable and scalable innovations that are transformative. Some inspiring examples from our School include:

- Mark Sobsey, PhD, and colleagues designed a much improved ceramic water filter. A crucial test is its adoption on a scale large enough to make a difference.
- Repellent-treated mosquito bed nets are an important innovation. Faculty members, including Drs. Frieda Behets, Andrea Biddle, Steve Meshnick, Audrey Pettifor and Annelies Van Rie, conduct field studies to ensure that nets are adopted in practice.
- Noel Brewer, PhD, and Jennifer Smith, PhD, are among the first to study how new vaccines to prevent HPV are being adopted.
- The *Safe Dates* program, developed by Vangie Foshee, PhD, and colleagues, is more effective than previous programs; it now is being used around the country.
- Deborah Tate, PhD, was one of the first to take dietary counseling online.
- Marci Campbell, PhD, was awarded an NIH Challenge Grant for her novel use of microfinance and health behavior interventions to improve diets in eastern North Carolina.
- Sue Havala Hobbs, DrPH, and Ned Brooks, DrPH, created a new hybrid-model executive Doctor of Public Health program that allows students to keep working while earning a doctorate.

We have funded 18 Gillings Innovation Laboratories to solve big public health problems and accelerate solutions. The range of programs, from development of new laboratory tests to new ways of encouraging use of local foods, is impressive.

Many innovations are worthy of adoption. Yet, we know that the process of adopting public health innovation is painfully slow; people die waiting. Several faculty members, including Alice Ammerman, DrPH, Cathy Melvin, PhD, and Bryan Weiner, PhD, focus on speeding adoption of innovations.

Our faculty, staff, students and partners are creating ideas, programs, tests and tools to improve the public's health and translate effective programs into practice. Together, we bring life to public health "innovation." It's a matter of health!

> "To him who devotes his life to science, nothing can give more happiness than increasing the number of discoveries, but his cup of joy is full when the results of his studies immediately find practical applications."
>
> —Louis Pasteur

Note: Rimer also participates in a roundtable discussion about innovation on pages 4–5.

Bright ideas, right partners, insightful solutions

Vaccines for diseases such as polio and smallpox, fluoridation of drinking water, prenatal care and use of vitamin A to prevent blindness all are public health innovations. So are seat belt laws, clean drinking water, modern sanitation requirements and campaigns against abuse of drugs, alcohol and tobacco.

In this century, public health researchers could discover more advances—preventives for cancers, new ways to heal and protect the environment, effective means to prevent obesity and more efficient ways to provide health care for all.

"Innovation in public health brings hope to all humankind—hope that our children and our children's children will live healthier, higher-quality lives without much of the suffering that seems so prevalent in our world today," says Dennis Gillings, CBE, PhD, chair and chief executive officer of Quintiles and chair of the School's Advisory Council.

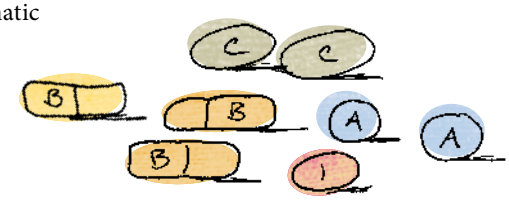
Innovation is fundamental at the UNC Gillings School of Global Public Health. This issue of *Carolina Public Health* is dedicated to the outstanding efforts of faculty, students, staff and alumni who are searching for more effective vaccines for tougher diseases (see page 10), finding better ways to provide clean water throughout the world (see page 17), waging war against obesity (see page 6), and fighting pollution, cancer and infectious diseases.

In January 2010, members of the UNC-Chapel Hill Chancellor's Innovation Circle visited the School to hear about some of our researchers' innovative solutions to water problems facing the world. The circle is an advisory council of respected UNC alumni and friends charged with helping to develop a roadmap for a culture of systematic innovation and entrepreneurship at Carolina. It is chaired by Lowry Caudill, PhD, a 1979 UNC graduate and co-founder of Magellan Laboratories Inc. After the visit, Caudill said he and other circle members were impressed with research being done at the School.

"Chancellor Thorp's vision is to transform new knowledge in the university for maximum societal benefit," Caudill said. "The (Gillings) School of (Global) Public Health is doing this already and doing it really, really well. I made the point later in the afternoon to the whole group that as we look for best practices at other schools like Stanford and MIT, we need to look in our own backyard at the School of Public Health."

So what *is* innovation?

"Innovation is all about creating things," said Don Holzworth, chair of Futures Group International and the School's Gillings Executive in Residence. "It's about joining ideas that haven't been joined before, which



ultimately leads to a breakthrough or a more efficient way of delivering something we already know about."

Innovation often comes when people with different perspectives join forces to solve a problem.

"The 'outsider's perspective' can stimulate new ideas," Holzworth said. "It's disruptive thinking, but it's constructive disruption."

The UNC Gillings School of Global Public Health is partnering with different departments, universities, government agencies (domestic and foreign), nongovernmental organizations, companies and individuals. For example, UNC biostatistics researchers now work with researchers at Duke and N.C. State universities to find ways to design more powerful clinical trials for cancer treatments. Their work is funded through a $12.5 million grant from the National Cancer Institute (see page 26). UNC public health researchers also have teamed up with officials and academicians in the United Arab Emirates and with Rand Corporation and others to assess environmental and public health risks accelerated by development and to establish a national strategy for addressing those risks (see page 14).

"Because everyone's resources are so limited, it's more important now than ever before to be creative and work with partners we've never worked with before," said Leah Devlin, DDS, Gillings Visiting Professor and former North Carolina state health director.

Devlin lauds the School's efforts, especially through the N.C. Institute for Public Health (NCIPH), to work with the state's Department of Health and Human Services and with local health departments throughout North Carolina.

"We are the only state in the country that requires accreditation of our health departments to establish consistent standards," she said.

Jane Smith Patterson, executive director of e-NC Authority and member of the School's Advisory Council, echoes Devlin's enthusiasm for how the state and the university can enhance each other's work.

"By matching public health needs with the knowledge of university public health researchers and public health practitioners, there is an amazing opportunity to develop innovative programs and practices that can be…taken to scale in close to real time," she said.

But not every innovation is an improvement, cautions Barbara K. Rimer, DrPH, dean and Alumni Distinguished Professor at the School.

"In 2005, for example, biostatistics professor Ed Davis, PhD, and others found that new medicines to treat schizophrenia were not better than their predecessors, cost more and caused more side effects," she said.

"This comparative effectiveness research is essential. We must know when newer is not better."

Innovations are more than inventions, Rimer said.

"We care about innovations because in public health, and especially in our School, we aim to solve some of the world's greatest problems. We must be willing to look at how we have done things before and ask whether there are other, better ways to do a thing. We want to create the ideas, programs, tests and tools that make the world better. Those are public health products, and they are happening right here, at our School."

And they're making a difference.

"Public health investment and dedication by our university are making the difference and will continue to do so," Gillings said.

"Moreover, prevention promises huge breakthroughs, particularly if we can impact selective behavior patterns in cost-effective ways. I am excited about our opportunity and applaud our dedicated researchers for their motivation and devotion to improving the health of us all."

–Ramona DuBose

> "Innovation is all about creating things … It's about joining ideas that haven't been joined before, which ultimately leads to a breakthrough or a more efficient way of delivering something we already know about."
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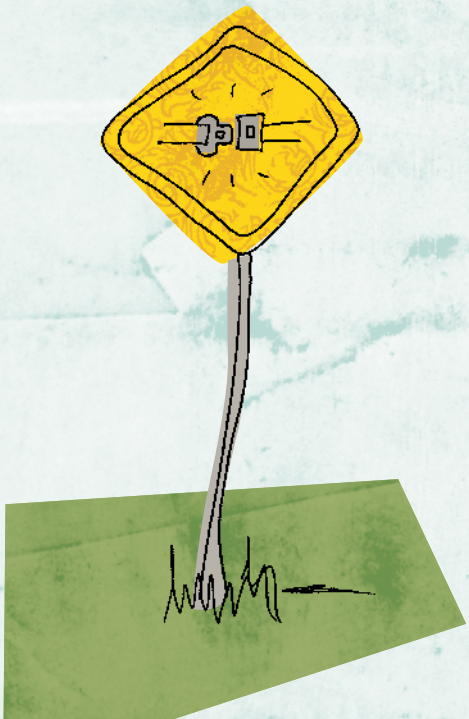
> –Don Holzworth



No sugar-coating the crusade against obesity

When Barry Popkin, PhD, advocates for a national tax on sugar-sweetened beverages, soft-drink makers and food-industry groups attack. "Everybody comes after me," he says.

But Popkin, an internationally recognized expert in nutrition and obesity, is unfazed.

Savvy, passionate and eager to speak out, he says, "I want to have an impact."

The Carla Smith Chamblee Distinguished Professor of Global Nutrition in the University of North Carolina's Gillings School of Global Public Health and director of the UNC interdisciplinary obesity program makes an impact *often*.

You may have seen his comments in *The New York Times* or *Time* magazine or heard him on National Public Radio or Al Jazeera. He's such a seasoned media source that he might show up for a satellite interview at the UNC television studios in a shirt and tie—and shorts and sandals. He knows he'll be visible only from the waist up.

Now 66, Popkin was among the first researchers to start tracking the effects of diet and activity. His data are based on four decades of observation of individuals, households and communities, from Russia to Mexico and China to Brazil. The worst problems used to be hunger and malnourishment. Now, obesity is epidemic in both developed and developing countries.

He says sugar-sweetened beverages are to blame for much of the weight gain. "You are what you drink," he says. In 1960, the average American consumed 100 to 200 calories a day in beverages. Today, the figure is 500 calories.

In 2005, Popkin assembled leading nutrition experts from Johns Hopkins, Harvard, Louisiana State and Oregon State universities, and other institutions, to study available literature and provide guidance on risks and benefits of various beverage categories. Their results were published in *The American Journal of Clinical Nutrition* in 2006.

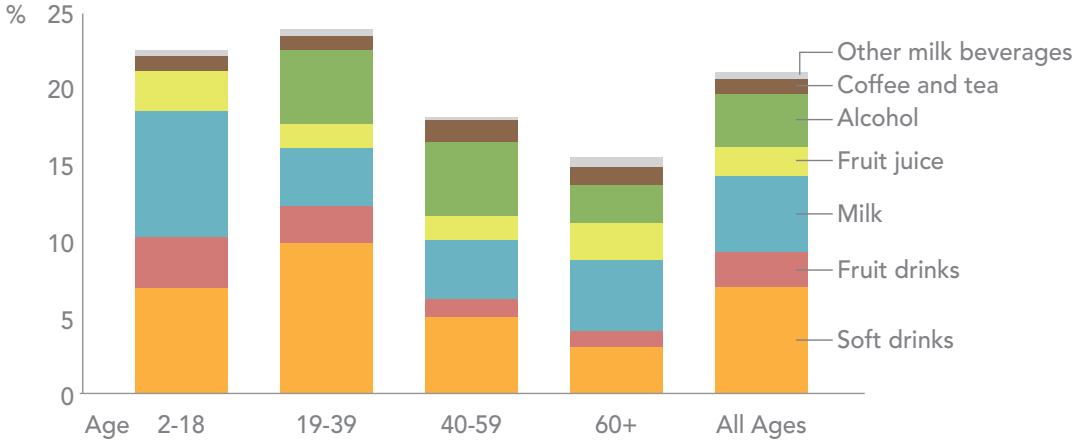
"The Beverage Guidance Panel that Barry convened produced a first of its kind—a guide for the kinds of beverages that have the best value for your health," says George Bray, MD, Boyd Professor and chief of the division of clinical obesity and metabolism at the Pennington Biomedical Research Center in Baton Rouge, La., and a member of the panel.

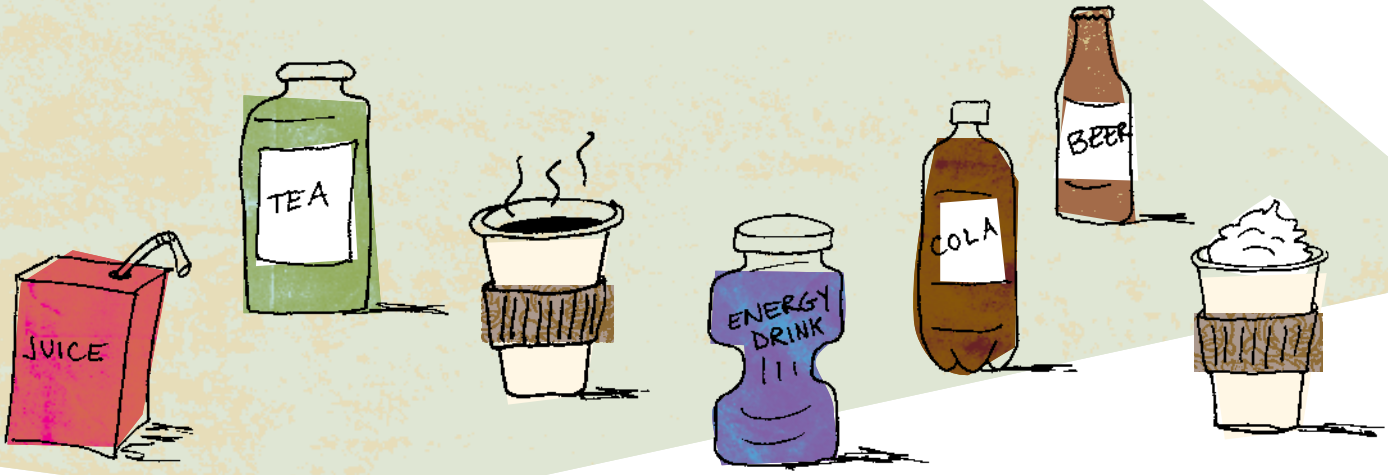
Now, Popkin works with governments around the world to establish beverage guideline policies.

"France and the U.K. have banned caloric beverages in schools," he says. "Mexico has created beverage guidelines, and now I am working with the U.K. and China on this topic."

In the U.S., he advocates a tax on sugar-sweetened beverages to discourage people from drinking them, he says. He and six other scholars wrote a 2009 report in *The New England Journal of Medicine* that advocated a consumer tax of one percent per

Percentage of daily caloric intake from beverage, by age group





ounce on sugar-sweetened beverages both to reduce consumption and bring in money to support health programs, as tobacco taxes have done. His latest study, published March 9, 2010, in *Archives of Internal Medicine*, shows that people eat less fast food, such as pizza and burgers, when the prices go up, supporting his proposal to tax these foods in addition to sugar-sweetened beverages.

Not surprisingly, soft-drink makers, supermarket companies, the fast-food industry and other groups poured more than $24 million into the coffers of Washington lobbyists in the first nine months of 2009 to fight a potential national tax and other regulations, according to *The Huffington Post*.

> "Popkin says sugar-sweetened beverages are to blame for much of the weight gain. "You are what you drink."

Popkin's recent book, *The World is Fat: The Fads, Trends, Policies and Products that are Fattening the Human Race*, draws on what he's learned throughout his career. He makes a strong case that lifestyle changes, including eating more sugary and fatty foods, as well as government policies and globalized food marketing, are fueling the weight gain.

"How we eat, drink and move has changed so drastically in the last 60 years," he says. "Our biology clashes with modern marketing and technology."

His research examines health implications of those policies and lifestyle changes, and his findings have been published in more than 300 articles in peer-reviewed journals, including *The New England Journal of Medicine*, *Journal of the American Medical Association*, *Science*, *Obesity*, *Circulation* and the *American Journal of Clinical Nutrition*. His research covers the whole spectrum of life—for example, he's published articles in both *Pediatrics* and the *Journal of Nutrition of the Elderly*. His work has appeared in renowned peer-reviewed publications in Europe, China, the Philippines and the Asia-Pacific region.

His most innovative work, say colleagues, has been developing the concept of "Nutrition Transition," a way of understanding long-term nutritional status changes by looking at shifts in the stages of eating, drinking and activity, underlying societal shifts and resulting effects on body composition.

He also has pioneered large longitudinal studies around the world, including ones in China, Russia and the Philippines. He's led related studies in Brazil, Mexico and other countries, studying some populations for four decades. "When I came into the field, such studies were not a focus," he says.

His work has played a major role in establishing databases for scholars to study diet and activity. More than 10,000 researchers have downloaded his longitudinal studies. ▸▸


LINDA KASTLEMAN

Dr. Barry Popkin takes personally his professional campaign for good health, regularly biking to campus for exercise. (Note: Popkin removed his helmet to pose for the photo, but he never bikes without it.)

"Barry has made many important contributions to nutrition research," says Penny Gordon-Larsen, PhD, UNC associate professor of nutrition, who has published several articles with Popkin. "He is probably most well known for his work on the nutrition transition and global obesity. Yet he also has made major contributions in investigations on the role of dietary fat in obesity, sugar-sweetened beverages and obesity, health disparities, and economic determinants of diet and obesity."

Popkin—tall, wiry and agile—attacks obesity many different ways. On a personal level, he rides his bike to work and around town. He is part of an international board of scientists helping to develop simple front-of-the-package labels in European countries, Israel and India. He's working with the Mexican Ministry of Health and Finance to develop a similar program in that country.

He also has waded into the U.S. Food and Drug Administration's review of nutrition labeling guidelines. In the Feb. 8 issue of *The New York Times*, he wrote: "Placing complicated labeling on the back of the package simply does not work. Studies from the Netherlands, the U.S. and elsewhere have found that system to be confusing and that it does little to affect consumer decisions. Front-of-the-package labeling, which has emerged in the past three to four years, promises to be more effective."

But he doesn't stop there.

Dr. Barry Popkin is a frequent guest at Carolina News Studio, giving interviews that are broadcast around the world.

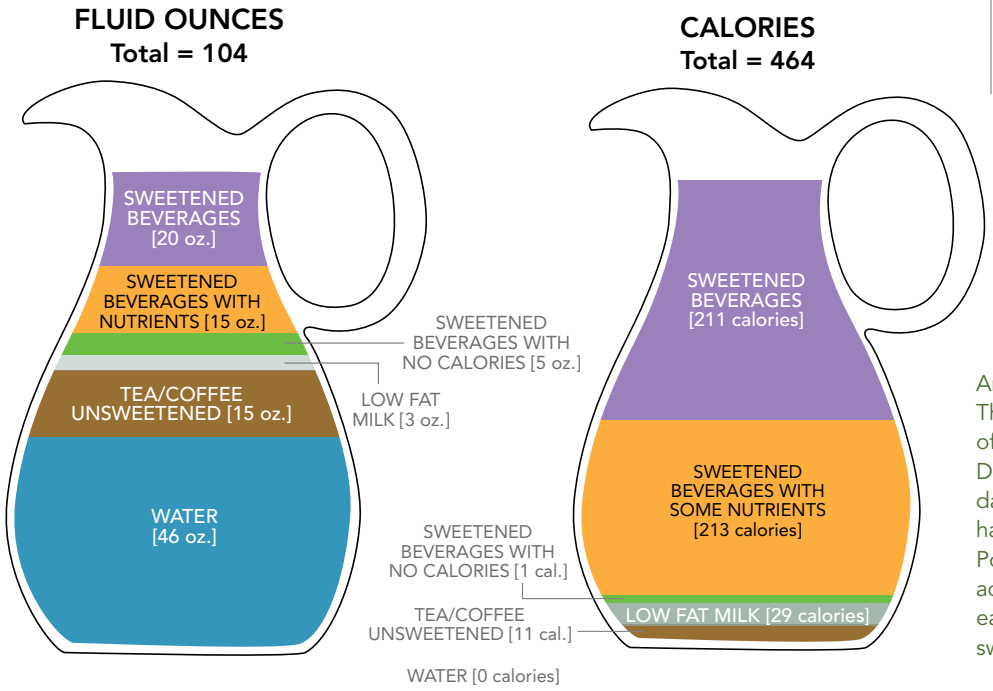
"We also need to remove all false advertising that says 'contains antioxidants' and tries to connote that a product is 'heart healthy' when there is no reality to that claim," he writes. "We need ways to stop food manufacturers from making misleading claims, and we need scientists independent of the food industry to set healthy guidelines for various food categories."

No wonder he's a target.

However, he also tries to reach out to the food and beverage industry, encouraging them to be part of the solution to obesity. In 2007, he started an annual "Global Obesity Business Forum" with senior executives from food, beverage and infant formula companies. The meetings are private, Popkin says, so the executives can be frank and open about their concerns and processes.

As a college student in the 1960s, Popkin was active in the civil rights movement nationally and in his home state of Wisconsin. Those experiences, he said, taught him to take the slings and arrows of criticism in stride. "There were people who loved you, and people who hated you," Popkin says. "That's the way it is when you're fighting for a cause." ■

–Susan Shackelford



Americans drink too much and drink unhealthily. These figures show the beverage intake pattern of adults in the U.S., in volume and calories. Drinking 35 oz. of sweetened beverages in a day (out of a total 104 oz.) accounts for about half of the calories consumed from beverages. Popkin's Beverage Panel suggests the average adult might best consume 98 oz. in beverage each day, including up to 50 oz. of water and no sweetened beverage without nutrients.

Flu viruses move fast—so do public health officials preparing for pandemic

Dr. Jennifer Horney

In August 2009, two months before the first shipment of H1N1 vaccine was to arrive in North Carolina, officials with the N.C. Division of Public Health already were planning how to distribute it.

They wanted to determine what people knew about the vaccine and how many were planning to get immunized. And they needed to know fast.

They found help at the N.C. Center for Public Health Preparedness at UNC Gillings School of Global Public Health's N.C. Institute for Public Health. Jennifer Horney, PhD, research assistant professor of epidemiology and deputy director at the center, partnered with UNC public health school alumnus Aaron Fleischauer, PhD, a commander with the U.S. Public Health Service stationed at the N.C. Department of Health and Human Services in Raleigh, to launch a rapid research project.

"For any preparedness effort, we want to understand how the community perceives the public health crisis so we can respond better," Fleischauer says.

In this case, telephone interviews weren't sufficient. Twenty percent of people in the U.S. have replaced land lines with cell phones, and one of the groups at highest risk for the H1N1 virus—people aged 18 to 25 years—are among those most likely to be missed by a traditional phone survey. The team decided to conduct in-person interviews, choosing a two-stage random sample that employed the use of parcel maps and geographic information systems.

"Interviewers use a hand-held computer with a GPS navigational tool that gives them a map and printed directions that send them to a random point. Then they go to the house that's nearest that point and conduct an interview," Horney explains.

A team of 20—including state personnel, UNC faculty members and student volunteers—conducted 207 interviews with people aged 18 to 92 from two North Carolina counties, Orange and Alamance. The population-based sampling method yielded interviews that would be representative of all the people who live in those counties, Horney says.

The study showed that, at least in these counties, people may not have been receiving the state's communications about H1N1, which were mostly online. Only a third of the people in the study said they typically found news and information on the Internet, while 83 percent depended upon television.

"It was a big surprise to us that most people (in these counties) were still getting news from television, and even printed newspapers, which were the second most common source of information," Horney says. Also, most people in the survey were unaware that the vaccine would be given in two doses, which was the plan at the time of the survey.

These findings helped the state create better and more targeted messages.

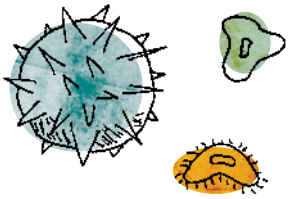
"Once we learned there were pieces of information that the community wasn't getting, we made special efforts to get it to them," Fleischauer says.

The study also showed a greater-than-expected potential demand for the vaccine, with 63 percent of respondents saying they planned to get vaccinated. The one previous study regarding H1N1 perceptions—a national Internet survey from Rand Corporation—had showed that only 50 percent of people planned to do so. If time and funds are available, Horney aims to follow up in spring 2010, to find out what percentage of North Carolinians got vaccinated. ■

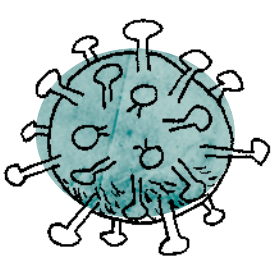
–Angela Spivey

The N.C. Center for Public Health Preparedness is part of a national network of preparedness centers funded by the Centers for Disease Control and Prevention (CDC). The study was funded by the Robert Wood Johnson Foundation, and results were published in the Dec. 25, 2009, edition of the CDC's Morbidity and Mortality Weekly Report (MMWR). *See http://snipurl.com/mmwr-flu.*

Going viral



From SARS to the common cold, Baric's research could lead to vaccines



An issue of *Carolina Public Health* on innovation would be incomplete without an article on Ralph Baric, PhD, and his work with viruses.

After all, he's the epidemiology professor who synthetically reproduced the variant of the SARS virus found in bats—probably the species from which the deadly human version emerged.

"Only three other teams of researchers have synthetically reconstructed a virus," he said when his research was published in the *Proceedings of the National Academy of Science*. "It will provide a model to understand the means and ease by which animal coronaviruses move from one species to another."

Baric and his team of researchers at UNC Gillings School of Global Public Health are world leaders in coronavirus research. This type of RNA virus is responsible not only for SARS but also for other types of childhood pneumonia and even the common cold.

"The lab has rewired the coronavirus genome—taking out the natural regulatory signals and rewiring them with synthetic signals," explains Eric Donaldson, PhD, research assistant professor of epidemiology.

"This prevents the rewired virus from recombining with natural strains of the virus and prevents reversion of vaccine strains into more dangerous strains. However, the rewired virus still causes a similar immune response in the body."

Baric and his team were awarded a Gillings Innovation Lab (GIL) to develop a low-cost, single-dose vaccine against respiratory illness in children living in developing countries. This vaccine would treat influenza, RSV and measles; be stable at room temperature; and inhaled, rather than given with a needle. If they are successful, their work could lead to a new approach for designing and administering other global health vaccines.

"No one has ever successfully delivered three antigens from three different highly pathogenic respiratory viruses simultaneously in a highly portable platform that would be affordable and easy to use in the developing world," Baric said after receiving his GIL.

RAMONA DUBOSE

Lisa Lindesmith, an epidemiology research specialist at the School, studies norovirus immunity in Dr. Ralph Baric's laboratory.

Any of these three projects—the synthetic reproduction of SARS, the genetic rewiring of coronavirus or the multivalent vaccine—could yield astounding stories about innovation. But Baric wanted to focus on yet another innovative project.

"Let's talk about norovirus," he suggested.

Noroviruses are those nasty little bugs that cause great misery—48 to 72 hours of vomiting and/or diarrhea in healthy adults. In infants and the elderly, the virus can be fatal.

"It only takes a few virus particles from respiratory droplets or fecal contamination to cause explosive transmission of the disease, especially in isolated communities," he said.

In communities such as retirement homes, college dormitories, military installations, cruise ships and even airplanes, the infection can have devastating results.

People can acquire norovirus infections more than once in a season.

"It's been thought that the body's immune response to norovirus infection is short-lived, and that's why people become reinfected," Baric said. "We don't believe that this represents the whole story. We think the virus is changing rapidly, so the body's immune


RAMONA DUBOSE

Dr. Ralph Baric's innovative work with viruses may lead to a portable, single-dose vaccine to prevent respiratory illness in children in developing countries.

system doesn't recognize the new strain."

The change is known as "antigenic drift." Immunity a person might have built up to one variation of the virus is powerless against the next strain. But Baric hopes that by finding common elements of the viruses' genetic structure—and then causing the body to build immunity to those elements—he can create a vaccine effective against about 95 percent of the norovirus strains that infect humans.

"His work, although still with mice, has shown there is a way to develop effective vaccines against these viruses, even though you have to cover quite a few genetic types," said Jan Vinjé, PhD, norovirus team leader in the Gastroenteritis and Respiratory Viruses Laboratory Branch of the U.S. Centers for Disease Control and Prevention.

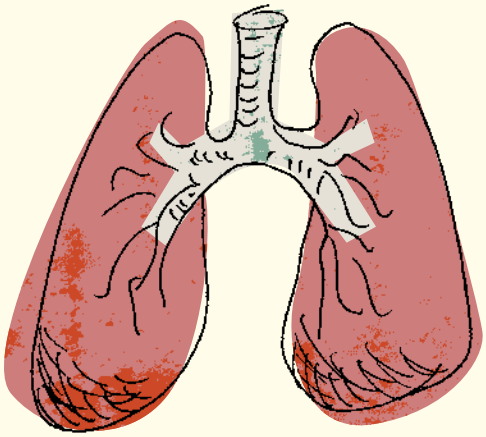
"[Baric] brings a fresh, new perspective to the field," Vinjé said.

Lisa Lindesmith, an epidemiology research specialist who's been working with Baric for 10 years, agrees.

"We are moving the field from the idea of short-term immunity. This is groundbreaking work, and so is the coronavirus work. It's very rare for a lab to be so good at two different things." ■

–Ramona DuBose

Harnessing vast data to understand COPD and speed up new treatments



Ten clinics in six study centers. Thousands of patients who suffer from a disease that has multiple variations. Three years' worth of clinical and molecular data for each patient.

How do you capture and organize the information a study like that generates? How do you analyze all that complex data to make it useful to those searching for treatments?

Through the groundbreaking methods of UNC's Collaborative Studies Coordinating Center—that's how.

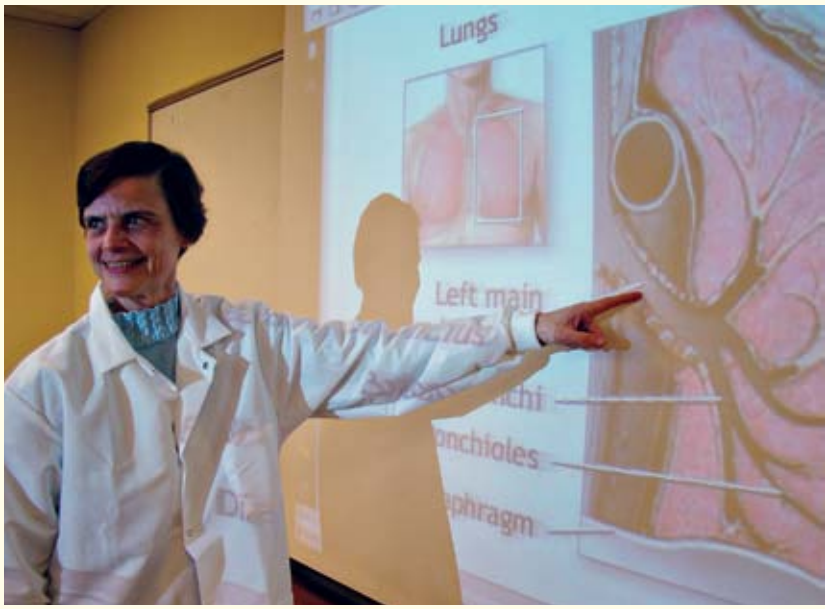
Lisa LaVange, PhD, director of the CSCC and professor of biostatistics at the UNC Gillings School of Global Public Health, leads data collection and analysis effort for a project called SPIROMICS, a nationwide study that aims to help the more than 12 million people with chronic obstructive pulmonary disease (COPD), a progressive condition that makes breathing difficult.

Dr. Lisa LaVange

SPIROMICS is short for SubPopulations and InteRmediate Outcome Measures in COPD Study. That mouthful of a moniker indicates the project's two goals: to identify and better understand the various kinds of COPD—known types include chronic bronchitis and emphysema—and to discover quicker ways to measure whether new treatments will work. LaVange and her team won a seven-year, $8 million contract from the National Institutes of Health's National Heart, Lung and Blood Institute to serve as SPIROMICS' Genomics and Informatics Center.

"It's a real pan-campus research project," says LaVange. She believes the award came to UNC because of its reputation for state-of-the-art approaches to biostatistics, data management and pulmonary research.

The Genomics and Informatics ▸▸



PHOTOS BY LINDA KASTLEMAN

At left, Dr. Richard Boucher examines a lung tissue sample while Drs. Claire Doerschuk and Wanda O'Neal look on. At right, Doerschuk presents information about the effect of chronic obstructive pulmonary disease (COPD) on the human lung.

Center draws together the expertise of Richard Boucher, MD, Claire Doerschuk, MD, and Wanda O'Neal, PhD, at the UNC School of Medicine; Jane Greenberg, PhD, and Javed Mostafa, PhD, at the School of Information and Library Science; and Fred Wright, PhD, and Wei Sun, PhD, at the UNC Gillings School of Global Public Health's Department of Biostatistics, where CSCC is based. The CSCC team includes programmers, statisticians, clinical monitors and project assistants and is led by CSCC faculty member David Couper, PhD, and project manager Betsy Carretta. A fifth-generation, state-of-the-art data management system, recently upgraded to enhance data security and implement industry-wide data standards, will be used for the massive amounts of data to be collected as part of the project.

Chronic obstructive pulmonary disease is the fourth leading cause of death in the United States, and currently no drugs bring about long-term improvement. Study centers in Winston-Salem, N.C., Ann Arbor, Mich., San Francisco, Los Angeles, New York City and Salt Lake City will conduct a wide range of clinical testing, collect biological specimens, and take both baseline and follow-up radiological scans of more than 3,200 patients.

"The fun comes when we start putting clinical, radiological, molecular and biological variables together," says LaVange.

LaVange's team will test specific hypotheses about new subgroups of COPD patients.

"Not all people are affected by all forms of COPD in the same way," she explains. "If we better understand the subtypes of the disease, we can better target patients for enrollment in clinical trials designed to investigate a particular therapeutic agent."

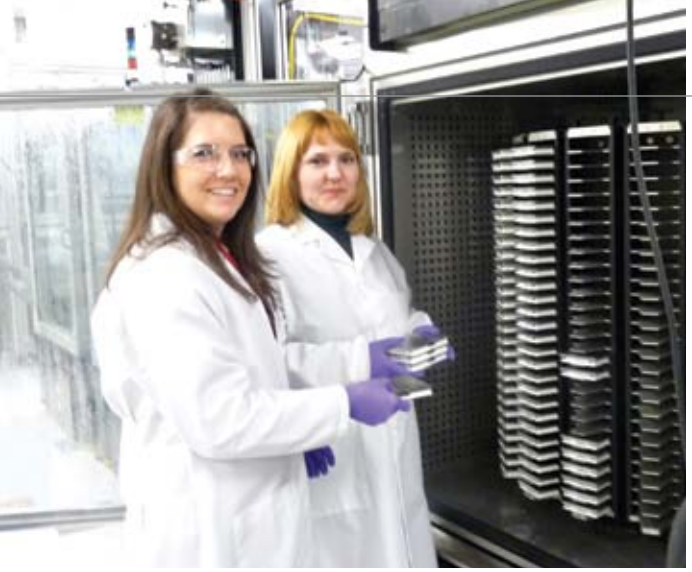
The team also will identify biological, clinical and radiological markers that indicate how severe a patient's disease is and potentially can provide a sense of whether a therapeutic agent is working or not. Clinical trials to test new pharmaceuticals can take years to complete, LaVange points out. Finding markers that predict long-term outcomes in a shorter period of time can accelerate the development process and, combined with more targeted patient enrollment, has the potential to improve the chance of success in future COPD clinical trials. ■

–Kathleen Kearns

> "The fun comes when we start putting clinical, radiological, molecular and biological variables together."

LINDA KASTLEMAN

Project manager Betsy Carretta, MPH (foreground), reviews materials with SPIROMICS team members including Dr. Patricia Basta (right), co-director of the Biospecimen Processing and Storage facility.



'Team Science' advances technology

Computational toxicology creates new ways to synthesize data

How much exposure to a certain chemical is safe?

What's the right dose of a given drug? So far, agencies charged with answering these questions—the U.S. Environmental Protection Agency and Food and Drug Administration—have not had good ways to account for an immutable fact about human beings—namely, that people are different.

Individual genetic makeup might keep one person from metabolizing a given substance, while another might metabolize so much that it becomes toxic. Ivan Rusyn, MD, PhD, associate professor of environmental sciences and engineering at UNC Gillings School of Global Public Health and director of the Carolina Center for Computational Toxicology (CCCT), leads several projects developing breakthrough methods to consider genetic diversity. Research by Rusyn and colleagues provides substantive data to determine safe levels for pharmaceuticals and environmental chemicals.

"Rapid advances in the technology of genotyping make these types of studies possible," Rusyn explains.

"Five or ten years ago, it was a major undertaking to sequence one individual mouse, yeast or human."

Now, he says, researchers can quickly and inexpensively sequence genetic information. That means genetic data on many individuals can be obtained easily.

It also means dealing with a staggering amount of information.

"For some research, where we screen thousands of compounds on hundreds of people, we have millions of data points," he says.

That's where computational toxicology comes in. The interdisciplinary field merges toxicology, biology and computer science to create new ways to synthesize data and predict chemical hazards.

"Toxicologists need biostatisticians, geneticists and molecular biologists to be part of the team," Rusyn says. "It's team science, and this campus is just great for building these teams."

Fred Wright, PhD, professor of biostatistics, is a key contributor to several research efforts underway at CCCT. "Without his help, we'd be dead in the water," Rusyn says.

The teams don't work on human populations per se, but on collections of human cells from different individuals or on populations of laboratory animals, such as mice.

"We're using cell lines and exposing them to different chemicals," Rusyn says.

"We're looking at whether different cell lines respond differently, and if so, why. Similar experiments can be done in animal models—for example, in mice where we know the genetic makeup of a particular strain. Having in vitro and computational tools allows us to address these risks without doing lengthy and unnecessary animal research."

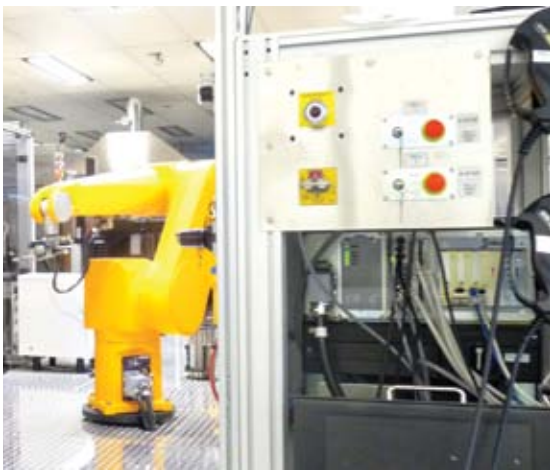
Dr. Ivan Rusyn

The center's collaborative approach includes partnerships with the EPA and the National Institutes of Health's National Institute of Environmental Health Sciences, National Toxicology Program and National Chemical Genomics Center.

"We work with government stakeholders to engage them in our research and leverage resources and expertise," Rusyn says.

Through this collaboration, he aims to find reliable models to predict how individuals will react to chemicals and drugs. Rusyn hopes that working directly with government agencies also will speed up the flow of information from the laboratory bench to the regulator's desk. ■

–Kathleen Kearns



PHOTOS BY DR. MENGHANG XIA AND SRI SAKAMURU

Collaborative experiments with the National Chemical Genomics Center are vital in generating data for Dr. Ivan Rusyn's research. Master's student Shannon O'Shea (above, left) and research specialist Oksana Kosyk traveled to the center to expose dozens of cell lines to various environmental chemicals, using the center's advanced robotic equipment (right).

UNC and UAE partner to protect the environment

Read the UAE project report at www.sph.unc.edu/uae/report.

Rapid development in the United Arab Emirates (UAE) has led to increased life expectancy and greater economic opportunity, but it also brings the potential for significant environmental and public health threats.

Since June 2008, researchers at UNC Gillings School of Global Public Health have collaborated with UAE officials in an effort to reduce and prevent such health challenges.

The UNC-UAE National Strategy for Environmental Health project, sponsored by the Environment Agency-Abu Dhabi, called for UNC researchers to assess the country's greatest environmental risks and develop a plan to strengthen the UAE's public health policy. UNC has partnered in that effort with UAE University's Department of Community Medicine and with the RAND Corporation, a global public policy research institution.

Researchers evaluated everything from water quality, to food safety, to global climate change. They found that outdoor air pollution is the top environmental threat to the country, followed by indoor air pollution and occupational exposures. (Read the UAE project report at www.sph.unc.edu/uae/report.)

Now, UNC epidemiologists are collecting data to determine the effects that indoor pollutants, diet and lifestyle have on Emiratis' health.

The project is an opportunity to help UAE officials manage environmental problems and set the future course of environmental protection, said principal investigator Jacqueline MacDonald Gibson, PhD, assistant professor of environmental sciences and engineering.

It also serves as a bridge to rebuilding relationships in the Middle East, she said.

"After September 11 (2001), so much damage was done to the relationship between the U.S. and the Middle East that I thought we needed to grab hold of this opportunity to do constructive work in the Middle East," MacDonald Gibson said.

DR. PETE ANDREWS

Dr. Jacqueline MacDonald Gibson (right) confers with colleague Rugaya Mohamed, from the Environment Agency-Abu Dhabi.

Ranking the risks

Once UNC researchers identified public health threats facing the UAE, the next step was to prioritize the needs for action. Common environmental risks do not always make headlines, but they may be the biggest threat facing a nation, MacDonald Gibson said.

Researchers worked with about 75 UAE stakeholders to determine environmental risk priorities.

UAE government officials, scholars and representatives from industry and nongovernment organizations participated in workshops to rank their priorities. Information on each risk was provided in uniform summaries that included details such as the fatalities the risk was expected to cause in one year.

"Many of (the stakeholders) had never experienced a group process like that, and they felt empowered that they had a chance to influence their policy," MacDonald Gibson said.

The project marked the first time this process has been used on a national scale to rank environmental risks. It has not been employed in the United States because policy here often is drafted after a disaster, MacDonald Gibson said. However, the Army Corps of Engineers is using the process to assess risks along the Gulf Coast.

The project marked the first time this process has been used on a national scale to rank environmental risks.

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Dr. Will Vizuete


Dr. Karin Yeatts

Outdoor air quality

Outdoor air pollution is easily the greatest threat to the 4.8 million people who live in the UAE. UNC researchers estimate that 600 deaths each year can be attributed to outdoor air pollution, with 540 of those due to particulate matter. Particulates include sand, which can carry microbial fungi and other infections, and result from diesel engines used for massive construction, oil and gas production, and car and barge traffic. Pollution from Europe and Eastern Asia also blows into the region.

To determine the UAE's risk from outdoor air pollution, scientists developed one of the first air quality models in the region to simulate the atmosphere. The model stretched beyond the UAE to the Arabian Peninsula as far east as India, north into Turkey and west to Cairo.

"We made the first state-of-the-art air quality model for that part of the world, and we created it using the most advanced scientific methods and techniques available," said Will Vizuete, PhD, assistant professor of environmental sciences and engineering, who worked on the UAE outdoor air quality team.

With the model's design, scientists at the public health school have created the infrastructure to track pollutants plaguing the UAE, a critical step for making policy decisions to reduce emissions.

Researchers now are drafting recommendations on how to improve the country's ambient air-monitoring stations and designing a study to measure more precisely the pollutants in the air.

Epidemiology study

The UAE-UNC Indoor Air, Health and Nutrition study is evaluating the air Emiratis breathe inside their homes, the food they eat and their general health and lifestyle patterns. The assessment will be done in 600 homes across the seven emirates.

The UNC team of 20 faculty and staff members are coordinating the study and working with faculty members from the United Arab Emirates University, who have hired more than 50 field interviewers to visit study participants' homes.

On their first home visits, field interviewers set up air monitors and make a list of the home's residents. Interviewers return seven days later to remove monitors and interview participants about their health histories, diets and lifestyles (e.g., whether they smoke or have recently exercised). Field interviewers record interview responses into a computer program that has been translated into Arabic. Our public health school's Collaborative Studies Coordinating Center (CSCC) developed the program and will analyze responses, says C. Edward Davis, PhD, research professor in the Department of Biostatistics.

The air monitors measure seven pollutants, including nitrogen dioxide, carbon monoxide, sulfur dioxide and particulate matter. Particulate matter is of special concern because increased exposure to fine and coarse particles is related to increased cardiovascular and respiratory disease exacerbations and outcomes.

To monitor for these particles, researchers use an innovative device called a UNC passive aerosol sampler. The instrument was developed by UNC alumnus Jeff Wagner, PhD, when he was a graduate student in environmental sciences and engineering, and David Leith, ScD, professor and associate chair of the department.

The goal of the study is to provide useful information about potential health effects of indoor air pollutants and determine the general health and nutrition status of Emiratis, said Karin Yeatts, PhD, the study's co-principal investigator and research assistant professor of epidemiology. The project principal investigator is Andy Olshan, PhD, chair of the department.

"I hope that the study findings will help the Environment Agency-Abu Dhabi with their air quality regulations," Yeatts said, "either to strengthen the regulations or verify that what they currently have is useful for protecting the public's health." ■

–Natalie Gott


TINA FOLLEY

Playing outdoors usually is a healthy activity, but outdoor air quality in the UAE threatens the country's 4.8 million people, especially children and the elderly.

Peers for Progress:

Fisher heads global group providing diabetes support

A peer educator in Cambodia conducts weekly group sessions, offering lessons about diabetes management and advice about physical activity and nutrition.

A community health worker in rural Arizona provides support and education to medically underserved migrant workers and new immigrants with diabetes. He helps order glucometers and visits the workers if they are sick.

Dr. Edwin Fisher

Peers for Progress, a program led by Edwin Fisher, PhD, professor of health behavior and health education at UNC Gillings School of Global Public Health, is working to ensure that more people living with diabetes or other chronic health conditions have access to similar peer-support networks.

Ongoing support from others who are coping with similar difficulties can offer emotional, social and practical assistance that will help people become healthy.

"Unless they are very sick, people with diabetes probably spend fewer than six hours each year in a health professional's office," Fisher says. "That leaves 8,760 hours each year they are 'on their own.' Peer support can help people take the plans they make in the doctor's office and put them into practice in their daily lives. They get their questions answered and stay motivated to sustain healthy patterns across those 8,760 hours."

The American Academy of Family Physicians Foundation established Peers for Progress in 2006. Recognizing UNC's pre-eminence in community and peer approaches to health promotion, the group asked Fisher and colleagues to host its Program Development Center a year later. Faculty members, students and research staff from the public health school's health behavior and health education department and UNC's School of Medicine guide the Center.

With initial funding from Eli Lilly and Company Foundation, Peers for Progress has focused on the global diabetes epidemic, projected to grow to 439 million people by 2030.

To accelerate best practices for peer support around the world, Peers for Progress aims to expand the proof that such programs are beneficial. It collects information about the many available programs, so as to secure recognition and resources for peer support as a core component of prevention and health care.

"The niche of Peers for Progress is to network with organizations around the world to facilitate more programs, better-quality programs and more secure support so the programs can help as many people as possible," Fisher said.

UNC Gillings School of Global Public Health has a long tradition of providing peer support in local communities. Current faculty including Eugenia Eng, DrPH, and Jo Anne Earp, ScD, professor and chair, respectively, in the Department of Health Behavior and Health Education, and Alice Ammerman, DrPH, and Marci Campbell, PhD, professors of nutrition, have been involved in a number of projects that empower individuals through individual and group peer support. ■

–Natalie Gott

Learn more about Peers for Progress at www.peersforprogress.org.

For information about MoPoTsyo, a non-governmental peer-support program in Cambodia, visit www.mopotsyo.org/peereducation.html.

For information about Campesinos Diabetes Management Program, a peer-support group in Arizona, visit www.diabetesinitiative.org/programs/DICSF.html.

Peers for Progress' executive board met in February 2009 to honor Dr. Jose Caro (front, center) who, as an executive at Eli Lilly and Company, conceived of the initial plan for Peers for Progress. The board includes UNC public health faculty members Drs. Jo Anne Earp, Ed Fisher, Laura Linnan and Deborah Tate.

TOM FULDNER

Water power—

bringing streams together to make a mighty river

In Cambodia, UNC students and faculty members show people who've never had clean water how to use ceramic filters in their homes. The lifesaving potential is immense and immediate.

Across the United States, municipalities use UNC-developed techniques to identify, remove and preclude the formation of "disinfection byproducts" from drinking water. These contaminants are created when chlorine and other chemicals used to purify drinking water mix with substances in water.

In eastern North Carolina, cities and towns have water-sharing and other water resource management agreements, developed with the assistance of UNC water experts, which make the most of scarce water resources and limited public budgets. The agreements are in effect not only in rural, "down-east" communities but also in the Research Triangle area, home to some of the state's largest cities.

Since the 1920s, when H.G. Baity began teaching sanitary engineering at the University of North Carolina, UNC has been a leader where water and health intersect. From locating the purest sources to developing technologies that keep drinking water safe, UNC faculty members and students are innovators.

Into this powerhouse now comes Jamie Bartram, PhD. For more than 30 years, Bartram has analyzed and advanced connections between the environment and health around the world. He comes to UNC from the World Health Organization, where he was coordinator for assessing and managing environmental risks to health.

In July 2009, he joined the environmental sciences and engineering faculty at the UNC Gillings School of Global Public Health, where his mission, through the establishment of a new Water Institute at UNC, is to bring together the many streams of water expertise within the School and university and incorporate them into one powerful river of research, teaching and service with partners throughout the state, nation and world.

"This School has an amazing track record of success at the junction between public health and water and sanitation," Bartram said. "We're at a point now where drawing together and focusing our strengths with those of our partners will enable us to make an even greater impact. The complex problems of today and tomorrow demand interdisciplinary responses. Our vision is to break the boundaries that constrain problem-solving by bringing together disciplines and sectors to confront some of humankind's most critical challenges, whether at the local, national or global level."

Philip Singer, PhD, UNC's Dan Okun Distinguished Professor of Environmental Engineering, has contributed greatly to the strength of UNC's reputation in water research. In 2006, he received the National Water Research Institute's acclaimed Clarke Prize for excellence.

"UNC has a world-class reputation in water resources, drinking water research and sanitation," Singer said. "We have a lot of students and faculty doing work on a variety of subjects involving drinking water and public health, but it's not a cohesive effort. If we can bring everybody together under a single umbrella, we'll be more effective in our efforts, generating more research funding and providing more valuable outreach."

Bartram, Singer said, is the right person to coordinate and focus such efforts.

"Jamie is an exceptional individual," Singer said. "He's known by almost everybody in the world in the water and sanitation field. He's creative, he's thoughtful, he's a visionary. And at the same time, he's very down-to-earth and likeable. I'm excited about what the future holds for our School and our University." ■

–Ramona DuBose

UNIVERSITY OF SURREY

"The complex problems of today and tomorrow demand interdisciplinary responses," says Dr. Jamie Bartram.


LINDA KASTLEMAN

How the world learns

New methods and technologies transform the teacher's role in global education

The ways we access and use information have changed radically over the last decade.

Thanks to innovations such as social networking, micro-blogs and instantaneously loaded video, we can know about an event within moments of its happening, even if it happens on the other side of the world.

These dramatic advances in technology—and our increasingly easy and economical access to it—affect the ways we learn. For educators trying to stay one step ahead of Google™, the challenges may seem to equal the potential. However, there is no longer a question of whether technology is essential to a teacher's toolkit. It is.

Innovative programs based in UNC Gillings School of Global Public Health's Department of Health Policy and Management and its Public Health Leadership Program are on the front lines of educating 21st-century learners.


LINDA KASTLEMAN

Dr. Rohit Ramaswamy (left) meets with research assistant Kate Barker, MPH, and Dr. Hollie Pavlica.

"The rise of new technologies poses both profound challenges and opportunities for educators," says William Zelman, PhD, professor of health policy and management. "The teaching-learning hierarchy is quickly changing from an emphasis on teaching to an emphasis on learning—and how to incorporate technology into the process."

"Millennial" students—those born between 1977 and 1995—are the focus of Zelman's new Gillings Innovation Laboratory. His "Teaching and Training in Public Health for the 21st Century: Toward a Global Seamless Classroom" examines issues related to curricula and engaging students in learning activities.

"Many millennials are multi-taskers," Zelman says. "They use the Internet for a variety of tasks, including for texting, e-mailing and participating in social media, many times a day. They demand activities that engage them, and incorporating information technologies is now an important part of curricular design."

Along with others, Zelman has developed a budgeting module designed to increase the financial literacy of budding public health practitioners.

The need for accessible and high-quality public health education has increased exponentially with the global increase in public health priorities.

"Current distance learning practices don't address the needs of public health practitioners around the world," says Rohit Ramaswamy, PhD, Gillings Visiting Associate Professor in the Public Health Leadership Program. "Many of the working public health professionals in developing countries have not had access to technology or information about best practices."

Ramaswamy's pilot program, "Leveraging Local Knowledge to Improve Public Health,"

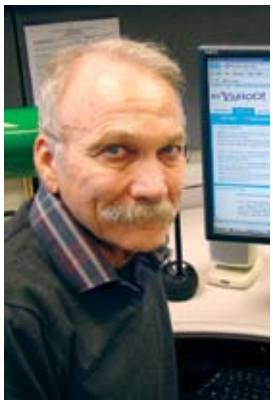
(Left) Alumni Julie Golding and Ju-Yeon Park multi-tasked between classes last spring in the atrium.

is based on a series of collaborations. To develop the distance learning course for global public health competencies, he has worked with School faculty members William Sollecito, DrPH, Diane Calleson, PhD, and Louise Winstanly, LLB, MS, of the Public Health Leadership Program, who teach, and Eugenia Eng, DrPH, Allan Steckler, DrPH, and Laura Linnan, PhD, of the Department of Health Behavior and Health Education, who designed the curriculum.

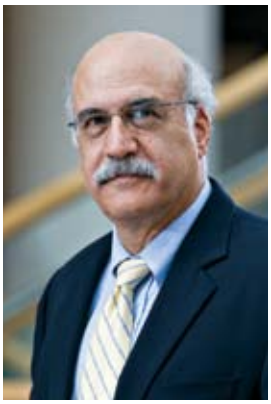
Public health professionals in six learning units—three in Ethiopia and one each in India, South Sudan and Swaziland—have taken part in the pilot program. The units include people who work together routinely and face similar public health challenges.

"Our School has developed expertise in educating degree-program students in collaboration and knowledge sharing," Ramaswamy says. "Although program participation does not result in an academic certificate or degree, the practice of public health is improved globally through participants' common understanding of best practices."

Another distance-learning endeavor, the Public Health Leadership Program's new online Certificate in Global Health, offers formal academic certification. Developed in partnership with the School's Office of Global Health with Fogarty International Center American Recovery and Reinvestment Act (ARRA) funds and a grant from the UNC General Administration, the certificate program includes courses in critical global health issues, ethics, infectious disease epidemiology, and monitoring and evaluation.



Dr. James Porto



Dr. William Zelman

Like the innovative programs mentioned above, this new certificate program uses a collaborative learning approach so that global leaders and health practitioners can share knowledge with fellow program participants. As students live around the world, their experiences also will enrich the course.

"The Public Health Leadership Program has a long history of success in online leadership education," says Hollie Pavlica, DrPH, clinical assistant professor in the program, "and we are uniquely positioned to meet the challenges faced by health leaders around the world."

James Porto, PhD, clinical assistant professor and director of executive programs in health policy and management, teaches a class that tracks health care reform legislation. Students' research, observations, questions and interactive Tweets are collected on a blog site, http://hpm755unc.wordpress.com, which serves as a news aggregator for the class.

"Ninety-five percent of management is decision making and problem solving," Porto says. "This format (which involves students analyzing health care proposals and having their analyses critiqued) lends itself well to public health issues students will face in the real world."

"It's essential," Porto says, "to be able to organize information. I see my role as that of a navigator through the many available resources."

The Executive Doctoral Program in Health Leadership, based in the Department of Health Policy and Management, prepares mid-career professionals for senior-level positions in organizations working around the world to improve the public's health. The three-year, cohort-based distance program confers a Doctor of Public Health in health administration.

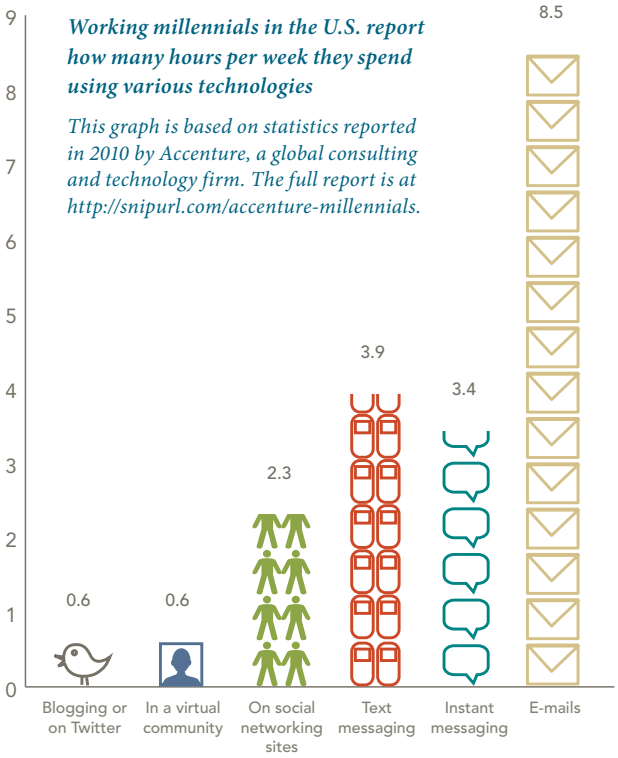
Students interact with faculty members and peers primarily online, using technology that supports live video, audio and data sharing.

One of the pinnacles of the School's online global health efforts occurred in the executive leadership program on Jan. 21, 2010. The first international online dissertation proposal was defended successfully. It involved a student from Lebanon, faculty members from American University and St. Joseph's University in Beirut, a faculty member in Paris, and two faculty members in Chapel Hill (Edward "Ned" Brooks, DrPH, and John Paul, PhD, clinical associate professors of health policy and management).

The world moves fast, but it's getting smaller every day. ■

–Linda Kastleman

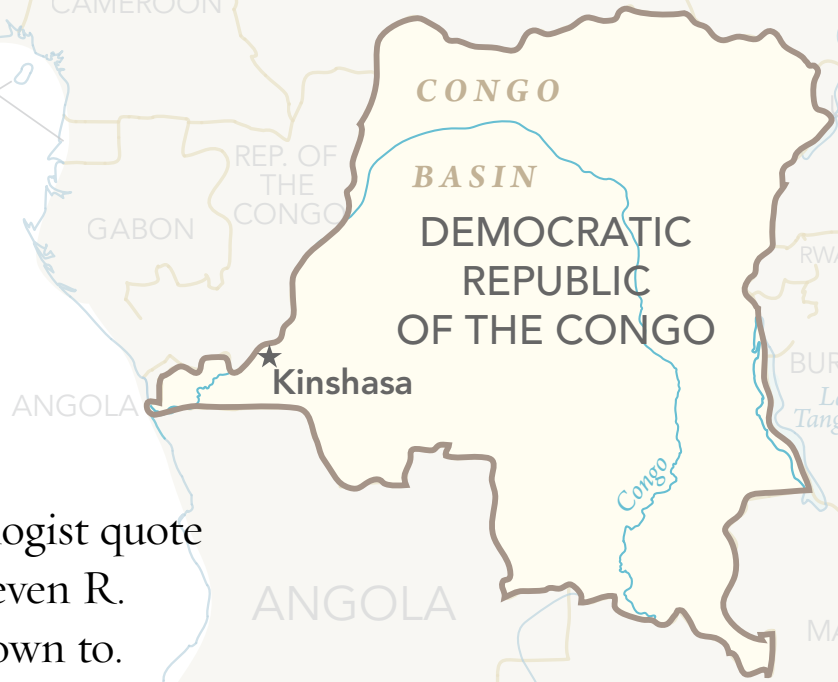
- *Read more about Zelman's Gillings Innovation Lab at www.sph.unc.edu/accelerate/gils/zelman.*
- *Read more about Ramaswamy's Global Learning Program at www.sph.unc.edu/glp.*
- *Read more about the School's Certificate in Global Health at www.sph.unc.edu/phlp/globalhealth. Applications for fall 2010 will be accepted until June 1.*
- *Read more about the online executive doctoral program in health leadership on the School's Web site (www.sph.unc.edu/drph) and in the Spring 2006 issue of Carolina Public Health magazine (www.sph.unc.edu/cph/drph).*



Working millennials in the U.S. report how many hours per week they spend using various technologies

This graph is based on statistics reported in 2010 by Accenture, a global consulting and technology firm. The full report is at http://snipurl.com/accenture-millennials.

Tracking tropical disease



You may not hear an epidemiologist quote a politician very often, but Steven R. Meshnick, MD, PhD, has been known to.

"As the late Senator Daniel Patrick Moynihan once said, 'You can't solve a problem until you first learn how to measure it,'" says Meshnick, who leads a highly collaborative Gillings Innovation Laboratory project to quantify cases of HIV and tropical disease in the Democratic Republic of the Congo (DRC).

Infectious diseases are the leading cause of death and disability in developing countries such as DRC. Yet remarkably, international health and development organizations don't have good figures on how many people suffer from these diseases.

"There aren't reliable estimates or maps of where people are," says Meshnick, an epidemiology professor at UNC Gillings School of Global Public Health. "This is a burning public health problem."

And he's about to help extinguish it, first for the DRC and then for other countries that undertake similar projects. In April 2010, Meshnick planned to share his team's results with the DRC's Ministry of Health, after which the team was to write formal reports of their findings. Such information will allow aid groups to make better decisions about where to expend money and resources.

Meshnick's interdisciplinary team has spent more than a year analyzing dried blood-spot samples for prevalence of disease. The team includes epidemiologists, geographers, molecular biologists and tropical disease experts.

Under the guidance of three doctorate-level Congolese researchers, two labs in Kinshasa, DRC, are extracting serum from samples to gauge levels of African sleeping sickness. At UNC-Chapel Hill, the lab is measuring HIV and malaria.

Researchers at UNC include epidemiology postdoctoral fellow Steve Taylor, PhD, microbiology doctoral candidate Martha Clark, geography doctoral candidate Jane Messina, assistant professor of microbiology Julie Nelson, PhD, and associate professor of geography Mike Emch, PhD.

The team records where people who have the diseases are located. A high prevalence of HIV was found in the war-torn eastern areas, for instance. There also is a high prevalence of malaria not only in rural areas, as expected, but in densely populated areas around Kinshasa.

KATHRYN JOHNSON

Dr. Steven Meshnick (right) works with Kashamuka Mwandagalirwa (left) and Jeremie Muwonga to sort dried blood-spot samples.

Dr. Steven Meshnick

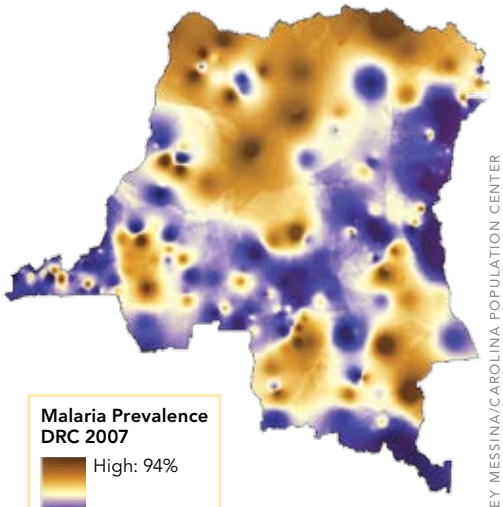
"We are currently looking into whether HIV or drug-resistant malaria tends to associate with refugee camps," Meshnick says.

The team also looks at its data in light of information from the Demographic and Health Survey conducted in the DRC in 2007, which featured interviews with nearly 9,000 households. Surveyors also obtained dried blood-spot tests to check for HIV, and that's where Meshnick's team got its samples. "We got the leftovers," he says.

But the "leftovers" were enough for a project that Meshnick believes will evolve into something more extensive over the next decade. Gene chips now being developed will allow robots to analyze far more about DNA than current methods can. These chips can look at thousands of antibodies and pathogens from a dried blood spot.

"Ultimately, we could look for any disease you can imagine," Meshnick says. ■

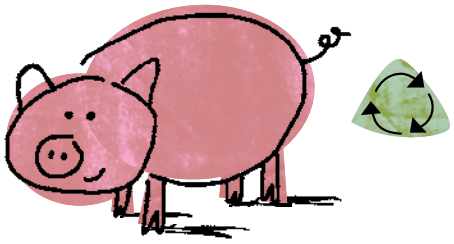
–Susan Shackelford



JANEY MESSINA/CAROLINA POPULATION CENTER

DR. MIKE AITKEN

Converting hog waste into energy



If you visit Tom Butler's hog farm in Harnett County, N.C., you might spot a covered trailer bearing the faint logo of a rodeo clown.

But don't think there's funny business inside.

The unlikely laboratory is the place where Mike Aitken, PhD, chair of UNC's Department of Environmental Sciences and Engineering, is conducting research to stem water and air pollution that comes from treated hog waste, a big issue in North Carolina, the second largest pork-producing state behind Iowa.

Through a Gillings Innovation Lab, Aitken and his team purchased the trailer second-hand. The ESE Design Center equipped it to operate as an onsite laboratory. Now parked by a hog-waste lagoon at Butler's farm near Lillington, the lab is testing Aitken's idea for removing ammonia, a noxious form of nitrogen, from the waste.

Ammonia is a desirable fertilizer, but too much of it damages soil and denigrates groundwater. "There is more nitrogen produced from hog waste in eastern North Carolina than could ever be used for crops in that region," Aitken says.

Furthermore, when farmers spray ammonia-rich waste on crops as fertilizer—a common practice—much of the ammonia is released to the atmosphere, generating the smelly odor ▸▸


LINDA KASTLEMAN


DR. MIKE AITKEN

Field technician John McNeill (left) and Dr. Glenn Walters, director of the ESE Design Center, discuss design strategies for maintaining pressure in a tank used to remove nitrogen from hog waste. At right, plastic covering over a hog waste lagoon not only contains the noxious smell of ammonia but also captures methane, which will be used to generate electricity instead of being released as a greenhouse gas.


TOM FULDNER

Dr. Mike Aitken

for which hog waste is well known.

Ammonia also reacts in the atmosphere to form fine particles that cause respiratory problems such as asthma.

"This is a big public health problem," Aitken says, going on to describe the process. "We are converting ammonia to nitrate, and then nitrate to nitrogen gas, which represents 79 percent of our atmosphere and can be harmlessly released."

The process consists of conventional wastewater-treatment technology, but two aspects of the project are unusual, Aitken says.

It's coupled with another project at the site which captures methane from the treated hog waste to generate electricity and thus minimize the release of the potent greenhouse gas.

Under a pilot program the state began in 2007, investor-owned utilities in North Carolina are required to buy the electricity. The farmer receives up to 18 cents per kilowatt hour, Aitken says. That far exceeds the several cents per kilowatt hour that utilities typically pay other power producers and thus could significantly help offset the farmer's technology cost.

The other innovative part of Aitken's project is technical. At a nominal cost, InVentures Technologies Inc. is providing a "bubble-less" aeration system that supplies oxygen required to convert the ammonia to nitrate. This method is superior to traditional tank-and-bubble systems for two reasons, Aitken says. It minimizes the release of ammonia from the treatment system and also may minimize emission of the greenhouse gas nitrous oxide, a by-product of the process.

Aitken began testing the ammonia-removal system in the first quarter of 2009 and expects the demonstration to last a year. Assisting him are graduate students Sarah Bunk and Eric Staunton, as well as Joe Rudek, PhD, a hog-waste policy expert with the Environmental Defense Fund in Raleigh, N.C., who holds master's and doctoral degrees from the UNC department Aitken heads.

While there are state incentives for the energy-conversion process, both Aitken and Rudek hope additional incentives, including credits for carbon and nitrogen removal, will emerge as legislation.

So far, Aitken says, "The state is not connecting the dots."

He hopes to make the connections clear soon. But for now, he says with a chuckle, "The trailer is turned so that you can't see the clown logo from the road." ■

–Susan Shackelford

Unraveling the mystery of arsenic's *modi operandi*

Dr. Miroslav Stýblo

Murder mysteries have given arsenic a sinister reputation, but the damage it does is no fiction.

The naturally occurring compound is the most harmful human carcinogen, says Miroslav Stýblo, PhD, associate professor of nutrition at UNC Gillings School of Global Public Health. It affects between 60 million and 100 million people around the world, most of whom are exposed by drinking water that has passed through geological formations containing arsenic.

"We have good evidence that links chronic arsenic exposure to cancers of the skin, bladder, lungs and possibly the liver," Stýblo explains. "It can also cause a spectrum of other diseases—cardiovascular disease, diabetes and probably many others."

Stýblo's Gillings Innovation Lab has taken a two-pronged approach to the problem. One objective is to develop techniques sensitive enough to detect arsenic in very small tissue samples.

The other goal is to analyze how arsenic is metabolized in human tissues into compounds more toxic than those found in drinking water.

The basic method for detecting arsenic in human tissue was developed some time ago. But researchers struggle with several challenges, primarily that the most toxic forms of arsenic disintegrate when exposed to air. Consequently, handling samples has been a stumbling block. The problem is compounded because areas where arsenic exposure is most widespread—primarily Southeast Asia, Bangladesh and the West Bengal region of India—tend to be rural and less developed.

In 2009, Stýblo's team designed a customized lab at UNC that integrates and modifies the work of two researchers in Prague, Jiří Dědina and Tomáš Matoušek of the Institute of Analytical Chemistry of the Academy of Sciences of the Czech Republic. Together, they have developed an innovative and inexpensive approach that uses very small samples. While fine-tuning the technique, they are sharing it with three laboratories in Mexico, another country where arsenic causes widespread harm.

Now Stýblo's lab is tackling its second challenge, analyzing the toxic compounds created when the human body metabolizes arsenic. Researchers previously have analyzed urine samples to determine arsenic exposure, but such samples can't tell us what arsenic does when it remains in human tissue.

> Stýblo is developing new ways to discern how arsenic impacts the human lungs and bladder.

Stýblo and his team are developing new ways to discern arsenic's impact on the lungs and bladder. Andrew J. Ghio, MD, medical officer in the U.S. Environmental Protection Agency's Human Studies Division, leads a UNC-based study that provides Stýblo's lab with epithelial cells from the airways of smokers exposed to arsenic in cigarette smoke. Two researchers in Mexico, Luz María Del Razo of the Research and Advanced Studies Center of the National Polytechnic Institute of Mexico (Cinvestav–IPN) and Gonzalo García Vargas of Universidad Juarez del Estado de Durango, supply exfoliated bladder cells isolated from the urine of Mexican residents exposed to arsenic in drinking water.

Stýblo's innovative analytical methods will give epidemiologists cheaper and better ways to identify and understand how arsenic harms human beings. The goal, he says, is to transfer this methodology to the field. That will give those working to stop a killer a new weapon to use. ■

–Kathleen Kearns

Dr. Stýblo (center) poses with Dr. Luz María Del Razo (second from left), UNC's Dr. Zuzana Drobna (in orange), Mayor Eusebio Aguilar and local public health workers in Zimapan, Mexico.

Safety first on the job,

especially for inexperienced teens


LINDA KASTLEMAN

"Restaurants, food stores and the fast-food industry can be hazardous places for young workers," says Dr. Carol Runyan.

Wanted: Secure job for teenage worker. Prefer no big equipment, no tractors or trucks, no heavy lifting. Safety is a top priority.

So where do you find a "safe" job for teenage workers? A clothing store at the mall? A fast-food restaurant? About 77 percent of teens who work have jobs in retail and service industries, according to the Bureau of Labor Statistics. Those jobs might *seem* safer than jobs in construction or agriculture.

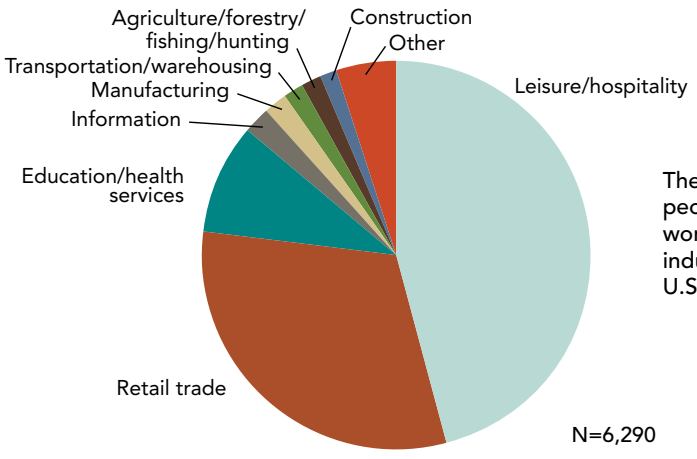

Dr. Carol Runyan

But Carol Runyan, PhD, director of the UNC Injury Prevention Research Center and professor of health behavior and health education at the UNC Gillings School of Global Public Health, wants young workers and their families to know that injuries occur on all kinds of job sites. More than 200,000 teenagers are injured on the job each year.

"Food slicers, hot grease, slippery floors and box crushers account for some of these injuries," Runyan says. "Restaurants, food stores and the fast-food industry can be hazardous places for young workers."

Fifteen years ago, Runyan and her team collected statistics on young worker fatalities in North Carolina. She wanted to help prevent these deaths, so she began analyzing the circumstances in which teens work.

The national study she led, interviewing about 900 youth workers in retail and service occupations, showed that one-third of the respondents did not receive safety training and many worked without supervision. Her survey of teenagers working in construction in N.C. found that 84 percent of those surveyed performed tasks prohibited by child labor laws.



The majority of young people injured on the job work in the service and retail industries. (Shown here are U.S. data for 2007.)

Data provided by Janice Windau of the U.S. Bureau of Labor Statistics, from the Bureau's Survey of Occupational Injuries and Illnesses. Reprinted with permission from the Web site of the U.S. Centers for Disease Control and Prevention's National Institute for Occupational Safety and Health (http://snipurl.com/cdc-young-worker-injury).

"My research leads to where interventions need to be," Runyan says.

She identified interventions including enforcement of and education about child labor laws and development of strategies to ensure worker safety, such as employers' learning how best to supervise teenagers.

"Young workers lack experience," says Runyan. "In an attempt to demonstrate competence, they may take risks, not understanding the hazards involved. The responsibility for safety lies with the employer—and with the government, to set regulations, monitor compliance and then hold employers' feet to the fire."

Runyan's work has been groundbreaking in its impact on young workers' safety. In 2009, after significant media coverage of her studies, she was urged by N.C. Rep. Jennifer Weiss and the N.C. Child Fatality Task Force to share her results with several legislative committees, leading to two new laws designed to protect working children. One, a law with tougher penalties for employer violations, went into effect in North Carolina in December 2009. The other requires the N.C. labor commissioner to provide detailed reports on child labor complaints and obstacles to child labor law enforcement.

"This is an important step in raising awareness of young worker safety and the need to ensure that employers are accountable," Runyan says. ■

–Chris Perry

Putting new ideas where their mouths are

Face it—no tooth fairy is going to swoop in and mend the mouths of children with poor oral health.

But a decade of work by North Carolina public health and dental researchers at UNC has resulted in a kind of magic of its own—innovative programs that really *do* brighten the smiles of the state's youngest and most vulnerable.

One of the prevention programs is working so well that 35 other states have adopted North Carolina's model.

Into the Mouths of Babes was established in 2000 by a collaborative of public and private medical and dental groups, with funding from N.C. Medicaid. The initiative trained physicians to paint fluoride varnish on infants' and young children's teeth, screen for tooth decay and provide dietary and other dental health information to their parents. The program already reaches Medicaid-covered children in North Carolina in 45 percent of their well-child visits, says Gary Rozier, DDS, MPH, professor of health policy and management at the UNC Gillings School of Global Public Health.

Rozier and others founded the program after seeing an increase in dental disease in young children, particularly those from low-income families and those with poor access to dental care. The program marked the first time physicians started "'working in the mouth,' if you will," said Rozier, who holds a Doctor of Dental Surgery from UNC-Chapel Hill.

In conjunction with Into the Mouths of Babes, Rozier helped develop two more projects to serve the dental needs of young North Carolinians.

Carolina Dental Home is a pilot program in Craven, Jones and Pamlico counties that works to ensure access to pediatric dental services despite a shortage of dentists. Using an assessment tool developed by UNC and the N.C. Division of Public Health's Oral Health Section, physicians evaluate a child's teeth and risk factors and decide whether to continue treating the child or refer him or her to a general or pediatric dentist trained through the program to work with young children. Physicians, for instance, will advise parents about health behaviors, such as the use of fluoridated toothpaste, but will refer a child with a cavity to a participating dentist. Officials have seen increased referral rates and improved efficiency since the program started, Rozier said.

"All of these efforts are focused on increasing access to preventive services at an early age so we can get to these kids before disease occurs and prevent poor outcomes like hospitalization, which is much too frequent," Rozier said.

"The many collaborations between Dr. Rozier and the Oral Health Section of the N.C. Division of Public Health are a model for the state," said Rebecca King, DDS, MPH, chief of the Oral Health Section. "Working together, the public health school and the state health department bring together the best of the worlds of research and public health practice—to the benefit of North Carolinians."

> "All of these efforts are focused on increasing access to preventive services at an early age."

The other new project aims to promote preventive dental care in Early Head Start programs. Children who attend a participating Early Head Start program have their teeth brushed with fluoridated toothpaste at least once every day in the classroom. Teachers learn about oral health care and relay the information to parents and caregivers. Seventeen programs participate in the Early Head Start initiative in North Carolina, Rozier said.

Combined, the three programs provide a long list of benefits for preschool-aged children and their families. They help prevent tooth decay, reduce the amount of treatment a child needs and generally improve the oral-health-related quality of life for families, Rozier said. ■

–Natalie Gott

LINDA KASTLEMAN

Dr. Gary Rozier (center) discusses his work in North Carolina with (l-r) project manager Leslie Zeldin; Dr. William Vann Jr., professor of dentistry; postdoctoral fellow Dr. Bhavna Pahel; and Dr. Daniel Lee.

SCHOOL NEWS

For more information on these topics and other news, please see www.sph.unc.edu/news_events.

Explaining the health care reform debate

Dr. Jon Oberlander

Dr. Thomas Ricketts

Both local and national media have sought out School faculty members to comment on aspects of the national debate on health care reform, particularly after a bill was passed in March. Among those most often quoted are Tim Carey, MD, director of the Cecil G. Sheps Center for Health Services Research and adjunct epidemiology faculty member; Dean Harris, JD, clinical associate professor of health policy and management; Jon Oberlander, PhD, professor of health policy and management and social medicine; and Thomas Ricketts, PhD, professor of health policy and management. Media included *The New England Journal of Medicine*, *The New York Times*, National Public Radio, *USA Today*, MSNBC, CBS Sunday Morning and Evening News programs, American Public Radio's *Marketplace*, *AARP Bulletin Today*, *The Daily Tar Heel* (UNC), WCHL Radio and *The News & Observer* (Raleigh, N.C.).

Health policy and management doctoral student Brad Wright also blogs about health care reform in *The Huffington Post* (see www.huffingtonpost.com/d-brad-wright). ■

Major grants

In fiscal year 2009, despite a major economic recession, more than 400 grants and contracts, totaling more than $150 million, were awarded to faculty members with a primary appointment in the School—a 45 percent increase from the previous year.

Among the highlights:

Gates Foundation grant for urban reproductive health

The Bill & Melinda Gates Foundation awarded more than $22 million for a new project to improve reproductive health of the urban poor in sub-Saharan Africa and South Asia. Ilene Speizer, PhD, research associate professor of maternal and child health, is one of the two leaders of "Measurement, Learning and Evaluation for the Urban Reproductive Health Initiative," which will be run by UNC's Carolina Population Center. Working with the center on the project are the African Population and Health Research Center, based in Nairobi, Kenya, and the Population Reference Bureau in Washington, D.C. The project will help identify which urban reproductive health approaches and interventions are most effective and likely to have the biggest impact.

Statistical Methods for Cancer Clinical Trials

Michael R. Kosorok, PhD, professor and chair of the biostatistics department, will lead researchers from UNC, Duke University and N. C. State University to find ways to design more powerful clinical trials for cancer treatments. Their aim is to more quickly and effectively deliver better, more personalized new therapies to cancer patients. "Statistical Methods for Cancer Clinical Trials," a $12.5 million, 5-year grant from the National Cancer Institute, is designed to develop new methods for the design and analysis of cancer clinical trials. Co-investigators from the School include Joseph Ibrahim, PhD, Alumni Distinguished Professor of biostatistics; Jianwen Cai, PhD, biostatistics professor and associate chair; and Danyu Lin, PhD, Dennis Gillings Distinguished Professor of biostatistics.

Center of Excellence in Genomic Science

The National Institutes of Health's National Human Genome Research Institute and National Institute of Mental Health have awarded UNC an $8.6 million, 5-year grant to establish a Center of Excellence in Genomic Science. The center will explore how genes and the environment interact and affect certain mental diagnoses, including autism, depression, anxiety and adverse reaction to antipsychotic medicines. Public health researchers include Daniel Pomp, PhD, nutrition professor; and Fred Wright, PhD, professor, Fei Zou, PhD, associate professor, and Wei Sun, PhD, assistant professor, all in biostatistics.

Dr. Daniel Pomp

Sobsey presents water test idea to NASA, USAID and others

Mark Sobsey, PhD, Kenan Distinguished Professor of environmental sciences and engineering, is one of 10 innovators who participated in the first LAUNCH

event, held March 16–18, 2010, at Kennedy Space Center in Florida. LAUNCH sponsors include NASA, the U.S. Agency for International Development and the U.S. State Department. The inaugural event focused on water supply and quality.


Dr. Mark Sobsey

Sobsey presented a proposal for simple, accessible, affordable tests to assess water quality and safety to the 30-member LAUNCH Council, a diverse group of entrepreneurs, scientists, engineers and others who advised presenters about how to move their innovations forward into commercial production, field deployment and use.

Sobsey received a Gillings Innovation Laboratory to develop portable field tests to detect fecal contamination in water. He and an international team are designing reliable fecal microbe tests that will not require sophisticated laboratory equipment, electricity or advanced training of test users. ■

Technology enhances communication about the School

Social media sites provide an easy, and now mainstream, means to share information about research, practice and education opportunities—and a great way to network with colleagues, classmates and others.

UNC Gillings School of Global Public Health offers a variety of ways for students, alumni and friends to stay connected with the School and each other around the world.

Check out these opportunities:

LinkedIn — Tap into relationships and stay informed.
www.linkedin.com

experience — Post or search for jobs in public health.
www.uncsph.experience.com

Alumni Online Community — Find alumni in our online community.
www.alumniconnections.com/sph.unc.edu

twitter — Follow the School on Twitter.
www.twitter.com/uncpublichealth

YouTube — Check out the School's YouTube channel.
www.youtube.com/user/UNCpublichealth

flickr — Picture what the School has been up to.
www.flickr.com/photos/uncsph/collections

facebook — Join our Facebook community.
www.facebook.com

For links to more School connections (Dean's blog, events calendar, RSS feeds, iTunes podcasts, myspace, Second Life, Wikipedia, Student Affairs blog), visit www.sph.unc.edu/more_connections.

Events and other news

PHOTOS BY LINDA KASTLEMAN

Minority Health Conference addresses health inequality in the modern world

The 31st annual Minority Health Conference, "Building Community in the Age of Information: Fighting Health Inequality in the Modern World," was held Feb. 26, 2010, at the William and Ida Friday Center for Continuing Education in Chapel Hill, N.C. The event was planned and hosted by the School's Minority Student Caucus.

Columbia University's Robert E. Fullilove, EdD, presented the 12th annual William T. Small Jr. Keynote Lecture. The conference is the largest and longest-running student-led health conference in the country, regularly attracting more than 500 students, faculty, researchers, public health and human services professionals, and community leaders from N.C. and surrounding states, with at least as many throughout the country viewing the keynote lecture by webcast or on DVD.

Dr. Robert Fullilove (above) presented the keynote lecture at the 2010 UNC Minority Health Conference. Health behavior and health education students Aprajita Anand (left) and Emily Brostek led a team of students in planning and executing the event.

Online learning certificates now offered

The School now offers two new online learning programs for students not seeking degrees. The Public Health Leadership Program's online certificate in global health confers academic certification in global health competencies, focusing on global health issues, ethics, epidemiology and ▸▸

monitoring evaluation. Apply by June 1, 2010. Learn more at www.sph.unc.edu/phlp/globalhealth.

The Certificate in Maternal and Child Health Leadership (MCH *Olé!*) provides practitioners with core knowledge and skills to promote the health of women, children and families around the world. Apply by Oct. 1, 2010. Learn more at www.sph.unc.edu/mch_online.

New dissertation awards and merit-based scholarships offered

TWO NEW PROGRAMS to support students have been funded through Carolina Public Health Solutions, the group administering the $50 million gift to the School from Dennis and Joan Gillings.

As many as two dissertation awards will be granted to current doctoral candidates whose work has strong potential for public health impact. The $5,000 award(s) will be presented in spring 2010.

Any student applying to a UNC graduate degree program in public health also will be eligible to receive merit-based scholarship support. The School plans to make funding pools available each year. Academic departments and the Public Health Leadership Program will consider applications and make funding decisions.

Guest lecturers enrich School experience

NUMEROUS DISTINGUISHED GUESTS have made presentations at the School over the past several months. Below are highlights of a few who have shared their experiences and expertise. To hear many of these lectures online, visit www.sph.unc.edu/webcasts.

Dr. Thomas Frieden

Dean's Lecture Series

CDC Director Thomas Frieden, MD, MPH, spoke on Oct. 9, 2009, about the ways public health training "bridges the implementation gap." More than 400 people packed the School's atrium to hear Frieden discuss Centers for Disease Control and Prevention and public health priorities, including improvement of public health surveillance and epidemiology, support of state and local public health action, strengthening of global health work and having greater impact on public health policies.

Dan Ariely, PhD, James B. Duke Professor of Behavioral Economics at Duke University and author of *Predictably Irrational: The Hidden Forces That Shape Our Decisions*, presented a talk, "Predictably Irrational," on March 26, 2010.

James Marks, MD, MPH, senior vice president of the Robert Wood Johnson Foundation, spoke to faculty, staff and students on April 9, 2010. His talk was titled "Wayne Gretzky and the Future of Public Health Leadership."

2010 Foard Lecture

Jeanne Lambrew, PhD, director of the U.S. Department of Health and Human Services' Office of Health Reform, was expected at press time to deliver the 2010 Fred T. Foard Jr. Memorial Lecture on April 15 at The William and Ida Friday Center for Continuing Education in Chapel Hill, N.C. Lambrew received master's and doctoral degrees in health policy (in 1991 and 1993, respectively) from UNC. ■


Dr. Jeanne Lambrew

Career fair provides networking opportunities

More than 275 students, alumni and others attended the School's 2010 Career and Internship Fair on Feb. 4, 2010. Thirty-three companies and agencies sent representatives to meet some of the best trained public health students in the world.

This year, Abt Associates was a "Gold Sponsor" of the event. Abt associates apply their expertise in research, consulting, technical assistance, data collection, and medical and life sciences to a wide variety of problems in the public and private sectors. (See www.abtassociates.com.)

The School thanks Abt and other career fair sponsors, including ICF International, RTI International and the School Alumni Association. Read more about the event at www.sph.unc.edu/career_fair. ■


Company representative Brad Hollern and master's candidate Alrick Edwards talk to students about job opportunities at Abt Associates.

In Memoriam

Jessie Satia (1971–2010)

Jessie Satia, PhD, associate professor of nutrition and epidemiology and special assistant to the School's dean for diversity, died in her home in Chapel Hill, N.C., on Feb. 4, 2010, after a long illness.

During her career, Satia published more than 65 papers and authored two book chapters. Her numerous awards and honors include the Graduate Student Fellowship Award from the University of Washington and the New Investigator Award from the American Society of Preventive Oncology in 1999. In 2001, she won the Dannon Leadership Institute's Nutrition Leadership Institute Award. She was a three-time recipient, in 1999, 2001 and 2003, of the Minority Research Scholar Award given by the American Association for Cancer Research.

Satia explored methods and strategies to recruit African-Americans into research studies for cancer prevention and control. She also assessed and monitored trends in health-related behaviors among colon and prostate cancer survivors and examined whether health behaviors impact cancer prognosis and survival.

Memorial donations may be made to The Dr. Jessie A. Satia Memorial Fund.* ■

Mary Rose Tully (1946–2010)

Mary Rose Weber Tully, MPH, alumna and adjunct associate professor of maternal and child health, died Jan. 20, 2010, at the N.C. Cancer Hospital in Chapel Hill, N.C.

Tully was a co-founder and senior clinical associate of the Carolina Global Breastfeeding Institute in the Department of Maternal and Child Health. She also was director of Lactation Services at UNC Hospitals and a faculty member in the UNC schools of medicine and nursing.

Memorial donations may be made to The Mary Rose Tully Training Initiative at the Carolina Global Breastfeeding Institute.* ■

*To make a memorial gift, please visit www.sph.unc.edu/giving, or contact Kembrie Greene Farrow, Office of External Affairs, UNC Gillings School of Global Public Health, 107 Rosenau Hall, Campus Box 7400, Chapel Hill, N.C. 27599-7400, telephone (919) 966-0198.

Harriet Hylton Barr (1925–2009)

Harriet Hylton Barr, MPH, alumna and longtime health educator at the School, died Dec. 14, 2009, in Durham, N.C. Barr received a Master of Public Health in health education from UNC in 1948 and taught health education classes at UNC from 1967 to 1994. She served as the School's assistant dean for alumni affairs from 1983 to 1994, during which time she organized and energized an alumni association. In 1980, the association recognized Barr with its Distinguished Service Award, later renamed in her honor. The Harriet Hylton Barr Distinguished Alumnus Award is presented annually to recognize leadership, collaboration and innovation within the profession of public health; impact within the practice arena; and outstanding service.

A special remembrance was part of the School's Foard Memorial Lecture on April 15, 2010.

Memorial donations may be made to the UNC Gillings School of Global Public Health Foundation—Harriet Barr Memorial Fund.* ■

Barry Margolin (1943–2009)

Barry Margolin, PhD, former chair of the School's Department of Biostatistics, died Jan. 28, 2009, after many years of declining health. Margolin joined the biostatistics faculty in 1987 as professor and chair, a position he held until 1999. He also served as director of the biostatistics facility at the UNC Lineberger Comprehensive Cancer Center from 1989 to 1999.

A remembrance ceremony was held at the School on March 3, 2010. A memorial session honoring Margolin's distinguished career will be held at the Joint Statistical Meetings in Vancouver, Canada, on Aug. 3, 2010. ■

UNC GILLINGS SCHOOL OF GLOBAL PUBLIC HEALTH

AWARDS & RECOGNITIONS

August 2009 – March 2010

Details of these and other awards are available at www.sph.unc.edu/school/recognitions.

FACULTY

Devlin joins School as Gillings Visiting Professor


Dr. Leah Devlin

Leah M. Devlin, DDS, MPH, former N.C. State Health Director, was appointed as a Gillings Visiting Professor in fall 2009. The position is based in the Department of Health Policy and Management.

In her new role, Devlin is connecting the School, including the N.C. Institute for Public Health, with legislators and others working on public health issues in practice. She also is consulting with School leaders to develop approaches to strengthen the school's capacity as a regional and national leader in public health quality improvement.

Steckler and Eng recognized as Distinguished Fellows, SOPHE's highest honor

Allan B. Steckler, DrPH, and Eugenia (Geni) Eng, DrPH, professors of health behavior and health education, received the Society for Public Health Education's Distinguished Fellow Award for significant and lasting contributions to SOPHE and to the profession of health education.

The awards, which are the Society's highest honor, were presented at the organization's annual meeting in Philadelphia in


Dr. Eugenia Eng and Dr. Allan Steckler

November 2009.

SOPHE is an independent, international professional association made up of health education professionals and students.

Herring elected president of ENAR, prestigious biostatistics organization


Dr. Amy Herring

Amy Herring, ScD, associate professor of biostatistics, was elected president of the Eastern North American Region (ENAR) of the International Biometric Society (IBS) for a three-year term, ending in 2013.

IBS is the largest professional organization of biostatisticians and biometricians in the world, drawing its 5,800 members from more than 25 countries. ENAR is the largest subgroup of the organization, incorporating 1,600 members from the United States and Canada.

Our School has a strong history of leadership in the society, with four members of the faculty—including the late Dr. Bernard Greenberg and Drs. Jim Grizzle, Gary Koch and Lisa LaVange—having previously served as president.

Richardson appointed to White House advisory board


Dr. David Richardson

David B. Richardson, PhD, associate professor of epidemiology, was appointed by President Obama in October 2009 to the White House Advisory Board on Radiation and Worker Health.

Richardson's research investigates occupational and environmental causes of disease, with a particular focus on ionizing radiation. He has served in various capacities at the University of North Carolina since 1996 when he began as a postdoctoral researcher.

Dilworth-Anderson leads Gerontological Society, receives Reagan Award for Alzheimer's research


Dr. Peggye Dilworth-Anderson

Peggye Dilworth-Anderson, PhD, professor of health policy and management and interim co-director of UNC's Institute on Aging, was inducted in November 2009 as the new president of the

Gerontological Society of America at GSA's 62nd annual meeting in Atlanta, Ga.

Dilworth-Anderson is a member of the National Advisory Council for the National Institute on Aging and former member of the board of directors of the National Alzheimer's Association.

Dilworth-Anderson also received the Ronald and Nancy Reagan Research Institute on Alzheimer's Disease Award. She was honored on March 9, 2010, during the seventh annual National Alzheimer's Gala in Washington, D.C.

Baric elected to American Academy for Microbiology


Dr. Ralph Baric

Ralph Baric, PhD, professor of epidemiology at UNC Gillings School of Global Public Health, has been elected to the American Academy for Microbiology. He will be recognized at the Academy Fellows luncheon in San Diego in May 2010.

The American Academy of Microbiology is the honorific leadership group within the American Society for Microbiology, the world's oldest and largest life science organization. Baric's groundbreaking research focuses on coronaviruses, including SARS, and on noroviruses.

Read more about his research on page 10.

Adimora selected as one of top 100 African-American leaders by *The Root* magazine


Dr. Adaora Adimora

Adaora Adimora, MD, MPH, professor of medicine at the UNC School of Medicine and clinical professor of epidemiology in the public health school, was selected by *The Root* magazine as one of the top 100 African-American leaders.

The Root is a daily online magazine that aims to provide thought-provoking news commentary from a variety of black perspectives. "The Root 100" is a new honor that highlights the leadership and service of African-American men and women whose work impacts their communities and the world.

Adimora was honored for her research in HIV/AIDS.

Pink awarded distinguished professorship in health policy and management


Dr. George Pink

George Pink, PhD, has been appointed Humana Distinguished Professor of Health Policy and Management.

Established through a grant from the Humana Foundation, the professorship is awarded to a health policy and management faculty member with a national reputation for scholarship in health informatics.

Pink is a fellow at the UNC Cecil G. Sheps Center for Health Services Research and lead investigator in the center's N.C. rural health research and policy analysis center.

Ammerman appointed to state food advisory council


Dr. Alice Ammerman

Alice Ammerman, DrPH, professor of nutrition and director of UNC's Center for Health Promotion and Disease Prevention, has joined a new state council focused on improving policies and access to local, sustainable food in North Carolina.

The North Carolina Sustainable Local Food Advisory Council was established by the N.C. General Assembly in August 2009 to study, develop and promote policies that will create jobs, support communities, preserve the natural environment, increase access to fresh and nutritious foods, and provide greater food security for all North Carolinians.

Holliday wins award from N.C. Dietetic Association for contributions to field


Amanda Holliday

Amanda Holliday, MS, RD, clinical assistant professor in the Department of Nutrition, was named Outstanding Dietetic Educator of the Year by the Durham-Chapel Hill (N.C.) Dietetic Association and by the North Carolina Dietetic Association. She accepted the statewide award at an awards event in Princeton, N.J., on March 25, 2010.

STUDENTS

Graduate School announces 24 merit awards for public health students

Twenty-four UNC public health graduate students received merit awards for study in 2009–2010 and beyond, the UNC Graduate School announced in fall 2009.

The students are Sayan Dasgupta (biostatistics); Jonathan Crocker, Katherine Harrold and Edema Ojomo (environmental sciences and engineering); Jane Der, Katelyn Hausman, Chantel Martin, Melanie Napier, Damon Ogburn and Amitabh Suthar (epidemiology); Andrea Des Marais, Ann Gottert, Jessica Kadis, Elizabeth King and Sarah Lieff (health behavior and health education); Kristin Geonnotti, Elise Lockamy and Sarah Rutstein (health policy and management); Anna Bauer and Anupama Gomez (maternal and child health); and Scott Ickes, Erik Karlsson, Tosha Smith and Rebecca Tkachuk (nutrition).

Health policy and management teams compete in case competitions

Presha Patel, Gregory Mascavage and Jessica Folmar, second-year Master of Public Health students in the health policy and management department, won second place in the 14th annual Everett V. Fox Student Case ▸▸

(L-R) Presha Patel, Gregory Mascavage, Jessica Folmar

Competition, held during the National Association of Health Services Executives' annual educational conference in October 2009, in Orlando, Fla.

The competition offers first- and second-year graduate students an educational experience to enhance their problem analysis and presentation skills. Students are charged with applying their creativity, knowledge and experience to analyze real and diverse issues facing a health care organization.

Ashley Winslow, Sadaf Houssain and Matt Hasbrouck, graduate students in health policy and management, were among the top five teams at the University of Alabama at Birmingham's annual health care case competition on Feb. 11, 2010. A total of 24 teams participated in the competition.

Doctoral candidate Long among those honored with UNC teaching awards

Dustin Long, doctoral candidate in biostatistics, has received a Tanner Award for Excellence in Undergraduate Teaching by a Graduate Assistant. The award, given annually to five UNC graduate assistants, carries a $5,000 stipend.

Dustin Long

Long was among 21 students and faculty members who received teaching awards in January.

Phi Beta Kappa inducts nine undergraduates from UNC public health school

Nine of the 146 UNC undergraduates inducted into Phi Beta Kappa in fall 2009 hail from four public health departments.

The students, all from North Carolina, include Kateland Elizabeth Branch, Julia Vivian Loewenthal and Patty Tian Wang (nutrition); Bita Jasmine Emrani, Jared Richard Lowe and Pranay Prabhakar (health policy and management); Patrick Nathaniel Healy and Andrew Parker Morgan (biostatistics and biology); and Rachel Parker Stevens (environmental health science).

King, PHLP master's student, wins Kuno Research Award

Bradley King, a Master of Public Health student, has received the Michiko Kuno Award for Excellence in Student Research. The award, presented Jan. 27 as part of the UNC School of Medicine's John B. Graham Medical Student Research Day, recognized King's research on diabetic retinopathy screening.

King is a health care and prevention student in the public health school's Public Health Leadership Program and has completed his third year of medical school at UNC.

STAFF

NCIPH's Place receives leadership award

Janet Place, director of the Southeast Public Health Training Center, part of the N.C. Institute for Public Health, has received an award for Best Leadership Project at the Southeast Public Health Leadership Institute (SEPHLI) meeting, held in Winston-Salem, N.C. Her project was titled "Workforce Development Roadmap."

Janet Place

ALUMNI

Alumnus Jenkins presented with APHA's Lilienfield Award for teaching excellence

Dr. Bill Jenkins

Bill Jenkins, PhD, MPH, received the American Public Health Association's 2009 Abraham Lilienfield Award, which recognizes excellence in the teaching of epidemiology during the course of a career. An alumnus of the UNC Gillings School of Global Public Health, Jenkins is an affiliate of the UNC Institute of African-American Research (www.unc.edu/iaar) and co-director of UNC's Minority Health Project. He previously had a long, successful career at the U.S. Centers for Disease Control and Prevention and at the Center for Research on Health Disparities at Morehouse College in Atlanta.

N.C. INSTITUTE FOR PUBLIC HEALTH

NCIPH honored for state service

The North Carolina Institute for Public Health (NCIPH) received the N.C. Public Health Association's Partners in Public Health Distinguished Group Award in October 2009 at the Association's 100th anniversary meeting in Asheville.

The Institute, directed by Ed Baker, MD, MPH, research professor in the Department of Health Policy and Management, celebrated its tenth anniversary in 2009, highlighted by an event on Friday, Oct. 9.

The NCPHA award was established in 1998 to recognize organizations and professions that have made significant contributions to public health in North Carolina. ■

Details of these and other awards are available at www.sph.unc.edu/school/recognitions.

OUR DONORS

New cervical cancer initiative aims to save lives

Supported by a $1.5 million gift from GlaxoSmithKline, two of the School's researchers are teaming up with N.C. Gov. Bev Perdue and others to "eradicate cervical cancer" in North Carolina—the first step toward ending the disease nationwide.

The Cervical Cancer-Free Initiative, led by Noel Brewer, PhD, assistant professor of health behavior and health education, and Jennifer S. Smith, PhD, research associate professor of epidemiology, will develop a plan for the state based on evidence that cervical cancer can be prevented through vaccines and effective screening. Former North Carolina State Health Director Leah Devlin, DDS, who is a Gillings Visiting Professor at the school, is an adviser to the project.

> "North Carolina is a tremendous leader in this multi-state effort to end cervical cancer,

At the outset, the initiative aims to bring a coalition of stakeholders together to identify opportunities for and barriers to prevention, screening and treatment. The researchers also will develop a project to increase in-school access to vaccines, including the HPV vaccine which prevents infection with the virus that causes most cervical cancer.

Dr. Noel Brewer

Dr. Jennifer Smith

The initiative also will coordinate efforts in California (via the California Medical Association Foundation), Alabama and, eventually, other states. Each state will build a coalition of key stakeholders in cervical cancer prevention, including government, private, nonprofit and community groups.

"North Carolina is a tremendous leader in this multi-state effort to end cervical cancer," said Governor Perdue. "Initiatives like this go hand-in-hand with efforts such as our state's investment in the University Cancer Research Fund, a historic commitment to preventing and treating cancer through innovative medical research within our world-class universities." ■

–Natalie Gott

Allison composes song to celebrate School

Jack Allison, a 1966 UNC alumnus, has composed "Dedication Song" to honor the UNC public health school's new name as of September 2008—UNC Gillings School of Global Public Health.

The song celebrates new possibilities for growth at the School, thanks to Dennis and Joan Gillings' generous donation.

Allison began writing songs while serving in the Peace Corps from 1967 to 1969, when he worked in a children's clinic in Nsiyaludzu, Nigeria. He had an urge to see the world "outside the classroom" after graduating from UNC with a chemistry degree.

His songs contained lyrics with simple lessons for new mothers, which, if followed, would improve their babies' health.

Since his first efforts, Allison has raised more than $150,000 in charity through his music, establishing the Self Help Foundation to manage funds generated by his songs.

When he heard about the School's name change, he took the initiative to compose "Dedication Song" to commemorate the occasion. Allison based the lyrics on key words used to promote the School's goals, namely, *anticipation*, *acceleration* and *innovation*.

A copy of the CD is available upon request to anyone who makes a gift of $25 or more to the School's global health program. For more information, contact the School's Office of External Affairs at (919) 966-0198. ■

–Jay Cartwright

Jack Allison and his wife, Sue Wilson, are shown here with friends in Nsiyaludzu, Malawi.

Your Gift Today... *a healthier tomorrow*

Bequests are a vital source of support for UNC Gillings School of Global Public Health. Bequests:

- Create scholarships,
- Establish professorships,
- Build new facilities,
- Support research and
- Improve the public's health.

The School's continued excellence in research, teaching and service depends upon you—our friends and alumni who remember the School in their estate plans. Now—more than ever—your bequest makes a difference.

Contact us today about including UNC Gillings School of Global Public Health in your estate plans. For more information, check the appropriate box in the enclosed envelope, or contact:

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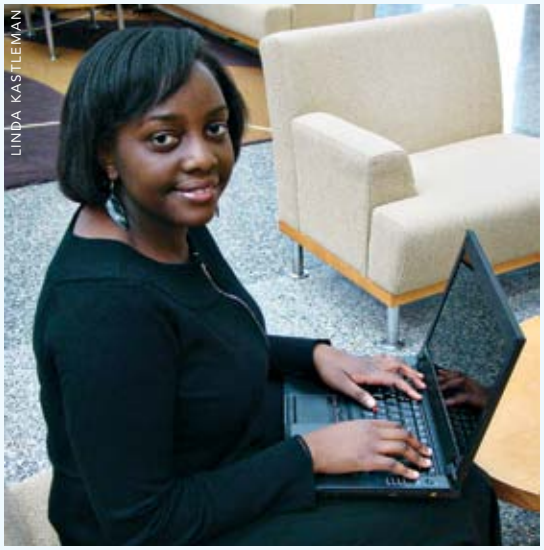
Chapel Hill, N.C. 27599-7407
lyne_gamble@unc.edu
919.966.8368


LINDA KASTLEMAN

Master's student Patsy Polston (right) is shown here with her adviser, Dr. Jill Stewart.

Senkomago selected for Tellus Educational Foundation Scholarship


LINDA KASTLEMAN

Virginia Senkomago

Doctoral student Virginia Senkomago, MPH, of Uganda, received a Tellus Educational Foundation scholarship to study infectious disease epidemiology, particularly sexually transmitted diseases in sub-Saharan Africa.

Senkomago, who also received The Winstanly Scholarship, funded by Derek and Louise Winstanly, currently is a research assistant on a project led by Frieda Behets, PhD, associate professor of epidemiology at UNC Gillings School of Global Public Health. Behets' project focuses on sustainable delivery of antiretroviral medicine to HIV patients in the Democratic Republic of Congo (DRC).

Senkomago is particularly interested in HIV/AIDS in sub-Saharan Africa because of the toll it takes on individuals' lives.

"Almost everyone I know in Uganda has a friend or relative affected by the disease," Senkomago said.

Tellus Leadership Scholarships worth up to $75,000 are awarded to remarkable, committed students from traditionally underserved countries.

"Virginia's proven academic performance and her clinical work in the DRC fit perfectly with the Foundation's goals," said Andrew Waters, president of the Tellus Educational Foundation. "We are thrilled that she is a Tellus Leadership Scholar."

"I want to use my knowledge to enhance the well-being of others," Senkomago said. "The Tellus scholarship allows me to do this, and I'm so grateful for the Foundation's support." ■

–Natalie Gott

Sanofi-aventis sponsors new Department of Nutrition scholarship program

Pharmaceutical company sanofi-aventis is sponsoring a new Department of Nutrition scholarship program that will help bring top international doctoral students to UNC Gillings School of Global Public Health.

Through the sanofi-aventis—UNC Global Nutrition Scholars Program, the company will fund half the cost of a five-year doctoral program for three international students, or about $410,000. The company's sponsorship will be matched with funds from the UNC Graduate School, the Department of Nutrition and faculty funding sources.

"We're trying to think more globally in our research and nutrition programming," said June Stevens, PhD, department chair. "This is a great step forward in accomplishing that goal."

Stevens says that the economic downturn has meant many qualified and enthusiastic international students have not been able to attend UNC. The scholarship will make that opportunity possible and will prepare more students to address nutrition and other health challenges around the world.

The first Scholars will arrive at UNC in fall 2010. After their first year of study, they will have the unique opportunity to develop skills and broaden their understanding of the global pharmaceutical industry through an internship with sanofi-aventis U.S. ■

–Natalie Gott

BIOS turns 60!

Dr. Gary Koch enjoys a presentation at a dinner to honor him, held during the biostatistics department's 60th anniversary celebration.

More than 300 alumni and friends of UNC's biostatistics department came to Chapel Hill, N.C., on Oct. 12, 2009, to celebrate the department's 60th anniversary.

A series of presentations illuminated the department's distinguished history, and attendees from as far away as Brazil shared remembrances about their experiences in Chapel Hill. The multiple-day event was a happy mix of scholarship and friendship.

"A key theme that emerged in our celebrations and presentations was the invaluable role of the student-mentor relationship," said Michael Kosorok, PhD, professor and chair in the department.

"We were all moved at how many of these relationships stay vibrant and alive, beyond campus walls and past graduation."

A fitting emblem of that phenomenon, Kosorok said, is Gary Koch, PhD, whose Festschrift* was a highlight of the celebration. Colleagues and former students presented lectures and testimonials to honor the longtime professor's achievements. A special issue of the journal *Statistics in Biopharmaceutical Research*, to appear in late 2010 or 2011, will include scientific articles honoring Koch.

One of the celebratory events was a breakfast for Lawrence Kupper, PhD, Alumni Distinguished Professor of biostatistics, who retires in 2010 after 40 years on the UNC faculty.

The department was established in 1949, under the leadership of inaugural chair Bernard Greenberg, PhD. Greenberg chaired the department until he became dean of the UNC public health school in 1972.

A gallery of photographs from the event can be seen at www.sph.unc.edu/bios/60.

To honor the department's 60th anniversary, ensure its continued preeminence, and/or honor a mentor, contact Stephen Couch, the School's associate director of development, at (919) 966-0219 or stephen_couch@unc.edu. Ask about the Koch Scholars Program, Gary G. Koch Student Travel Funds, Global Scholar Funds and other giving opportunities. ■

–Linda Kastleman

* A Festschrift is a volume of essays contributed by many authors to honor a colleague.

One generous turn inspires another

A tradition at the School's annual World of Difference dinner, held for donors who give at the Rosenau Society* level and higher, makes for a poignant stage picture. When a new endowed professorship is established, both recipient and donor are presented with a UNC captain's chair to mark the occasion.

In November 2009, the stage chairs were shared by Marcia Angle, MD, alumna of UNC Gillings School of Global Public Health, and Professor Jonathan Kotch, MD, faculty member at the School since 1978.

Marcia and her mother, Dr. Carol Remmer Angle, established the Carol Remmer Angle Endowed Professorship in Children's Environmental Health. Kotch was selected for the professorship, an honor acknowledging his many contributions to children's health and safety.

Like Kotch, both Drs. Angle have long histories of service in public health.

Marcia Angle is now an adjunct professor at Duke University's Nicholas School of the Environment and serves on our School's Advisory Council.

Carol Remmer Angle's half-century career in medicine includes many highlights. In the 1950s and '60s, she founded one of the country's first poison control centers, opened one of the first pediatric renal dialysis units in the U.S. and conducted novel research on environmental causes of lead poisoning among children. In the late 1960s, she became one of the first female chairs of an academic medical department in the nation.

"In endowing the award, Marcia and Carol Angle recognized that children are powerfully shaped by their social environments, families, schools, communities and societies," Kotch said at the 2009 World of Difference dinner.


TOM FULDNER

Dr. Jonathan Kotch

Dr. Jimmie Lee Rhyne

"We are absolutely thrilled to have a scholar and activist of Dr. Kotch's caliber as the first CRA Distinguished Professor of Children's Environmental Health," Marcia and Carol Angle said. "He is renowned not just for his impressive research accomplishments but also for extensive service to the community, state and country."

Kotch, in turn, has pledged to endow a scholarship to fund a summer internship for a maternal and child health student.

"Carolina attracts the best and the brightest, and those of us on the faculty are challenged to respond in kind," he said.

Kotch's scholarship is named in honor of his mentor, the late Jimmie Lee Rhyne, MD, a pediatrician who served many years as head of the N.C. Division of Public Health's maternal and child health branch.

"It gives me great pleasure to recognize Dr. Rhyne's passion for doing the right thing for children by naming this scholarship in his memory," Kotch said. ■

–Linda Kastleman

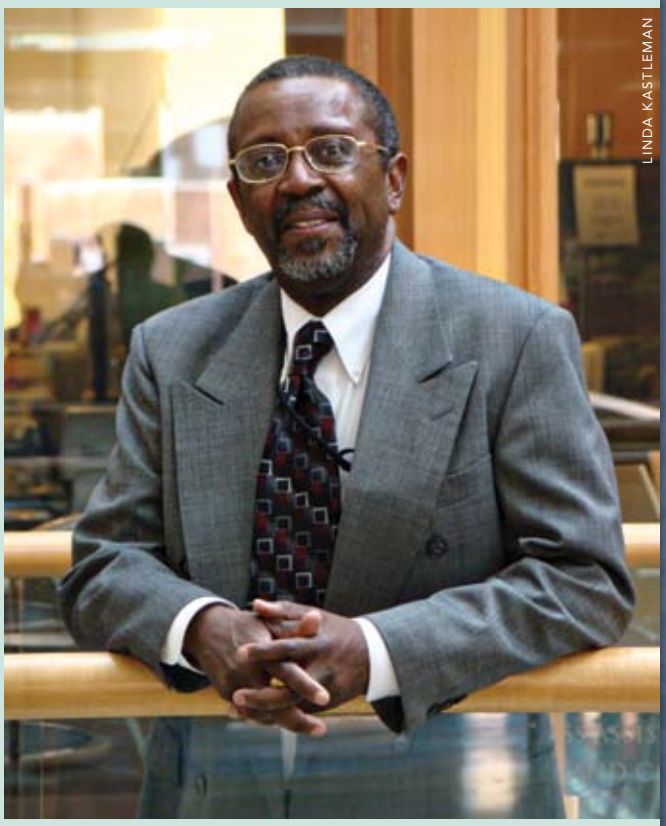

TOM FULDNER

Drs. Jonathan Kotch and Marcia Angle share the stage at the School's 2009 World of Difference dinner.

"Endowing a professorship at UNC is a win-win," say Marcia and Carol Angle. "Not only is UNC's Gillings School of Global Public Health a world-class institution, but the State of N.C. matches with a tax dollar every two dollars privately contributed towards professorships here!"

* Named in honor of Milton J. Rosenau, MD, first dean of the UNC School of Public Health, The Rosenau Society recognizes alumni and friends who give $1,000 or more in unrestricted funds to the School each year. For more information, see www.sph.unc.edu/giving.

Delton Atkinson, MPH: Champion of diversity


LINDA KASTLEMAN

Alumnus Delton Atkinson is soft-spoken, but his work in the world speaks powerfully and eloquently about his dedication to public health.

Now deputy director of the Division of Vital Statistics in the Centers for Disease Control and Prevention's National Center for Health Statistics, Atkinson earned two Master of Public Health degrees from UNC-Chapel Hill—in biostatistics and health policy and administration (now health policy and management).

He has taken on a number of roles to enhance the strength of his alma mater, including adjunct faculty member of biostatistics, president and executive board member of the School's alumni association and member of various School committees. He has received several awards for his work and visionary leadership, including ones from the North Carolina and American public health associations.

At CDC, he leads the re-engineering of his division's technology systems to increase the timely availability of health statistics and works with states to improve their statistics systems.

As current chair of the School's Public Health Foundation Board student support committee, one of Atkinson's goals is to increase diversity at the School.

To that end, in January 2010, Atkinson recruited 26 minority alumni and friends to address diversity issues at the School. Their ongoing conversations will explore how to quickly, effectively and fundamentally change the nature of the School so that a more natural diversity among students and faculty and staff members is guaranteed.

"I have had the opportunity to meet and interact with some of the outstanding young men and women in the School who represent our future public health leaders and workers," Atkinson said. "Hearing their stories and their goals made me realize, more than ever, the importance of helping them achieve success and the connectivity of their achievements and our future health care system."

Atkinson is dedicated to providing opportunities for higher education in public health, especially for students who are underrepresented at the School. Recently, he has established the Delton Atkinson Endowed Scholarship for graduate study at UNC.

"The professional success that I have experienced would not have been possible without the UNC (Gillings) School of (Global) Public Health," Atkinson said. "The School was the foundation of my career, which was made possible only through the solid financial support that I received not once, but twice. Recognizing and understanding this value has meant that 'giving back' to the School has always been one of my goals."

For more information on providing a scholarship opportunity similar to this one, contact Stephen Couch, associate director of development at the School, at (919) 966-0219 or stephen_couch@unc.edu. ■

–Linda Kastleman

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